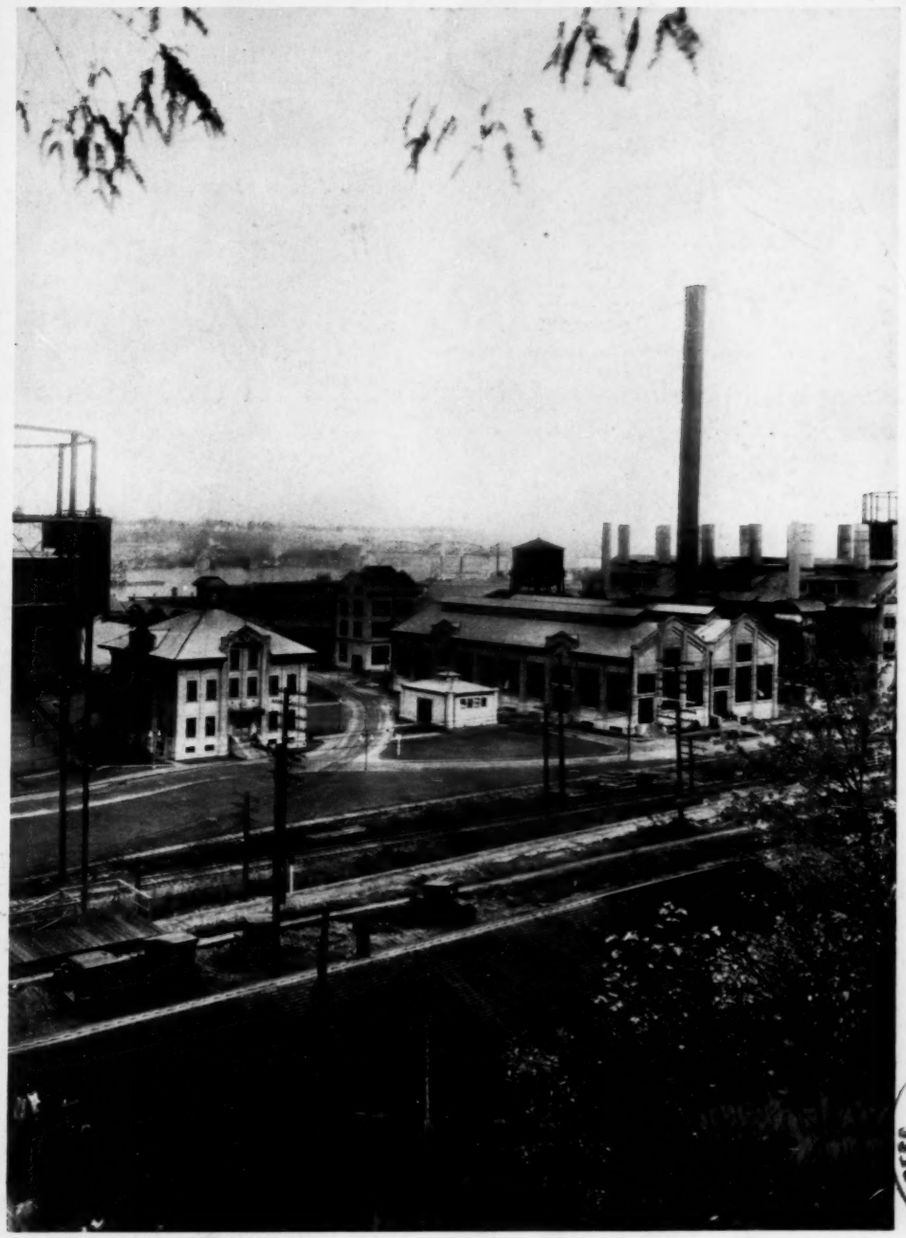
WESTERN GAS

October
1926



A general view of the Portland Gas & Coke Company's plant at Portland, Ore., where oil gas is manufactured to serve the needs of that progressive Northwest community.

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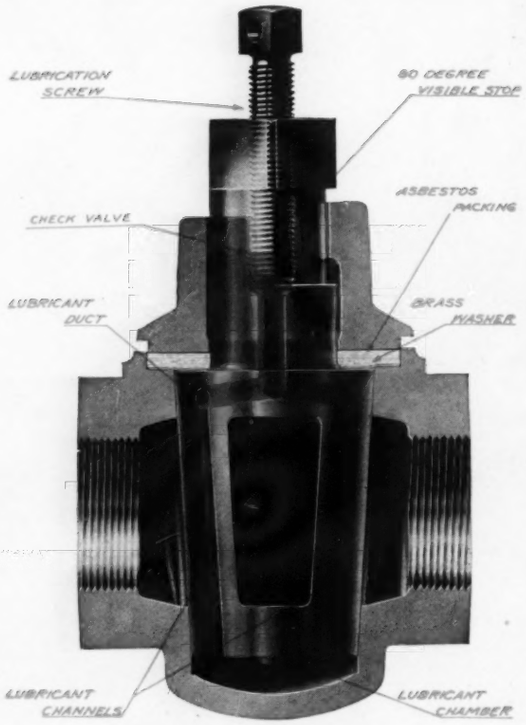

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3/8" to 16"

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For Gases, Fluids and Semi-Fluids

The Merco Nordstrom Plug Valve, because of its complete, lasting and constant lubrication, suffers no deterioration from wear, pitting, corrosion or scale formation on the bearing surfaces. In consequence, it handles without leakage anything that flows, from gases to slimes, hot and cold, acid and alkaline solutions.

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The TEEPLE Temperature Control automatically maintains any desired room temperature. Just set the indicator. You can't forget to turn it off. Equipped with a positive shut-off. Also permits manual operation when desired.

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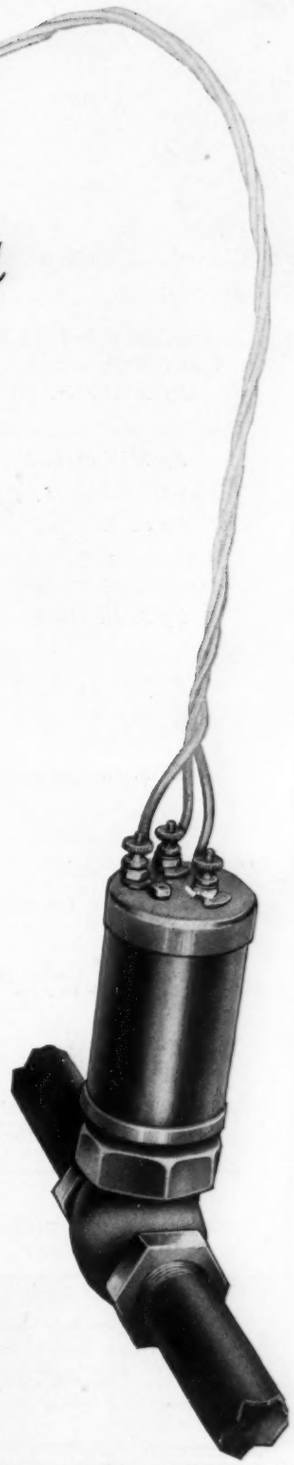

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Official Publication Of The
Pacific Coast Gas Association

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Volume 2 **October, 1926** **Number 6**

Western Gas is published by Western Business Papers, Inc. at 626 South Spring Street, Los Angeles, California. Subscription price (in advance) 20 cents the copy; $2.00 per year; 3 years $5.00; $3.00 per year foreign. Entered as second-class matter June 1, 1925, at the postoffice at Los Angeles, California, under the Act of March 3, 1879.

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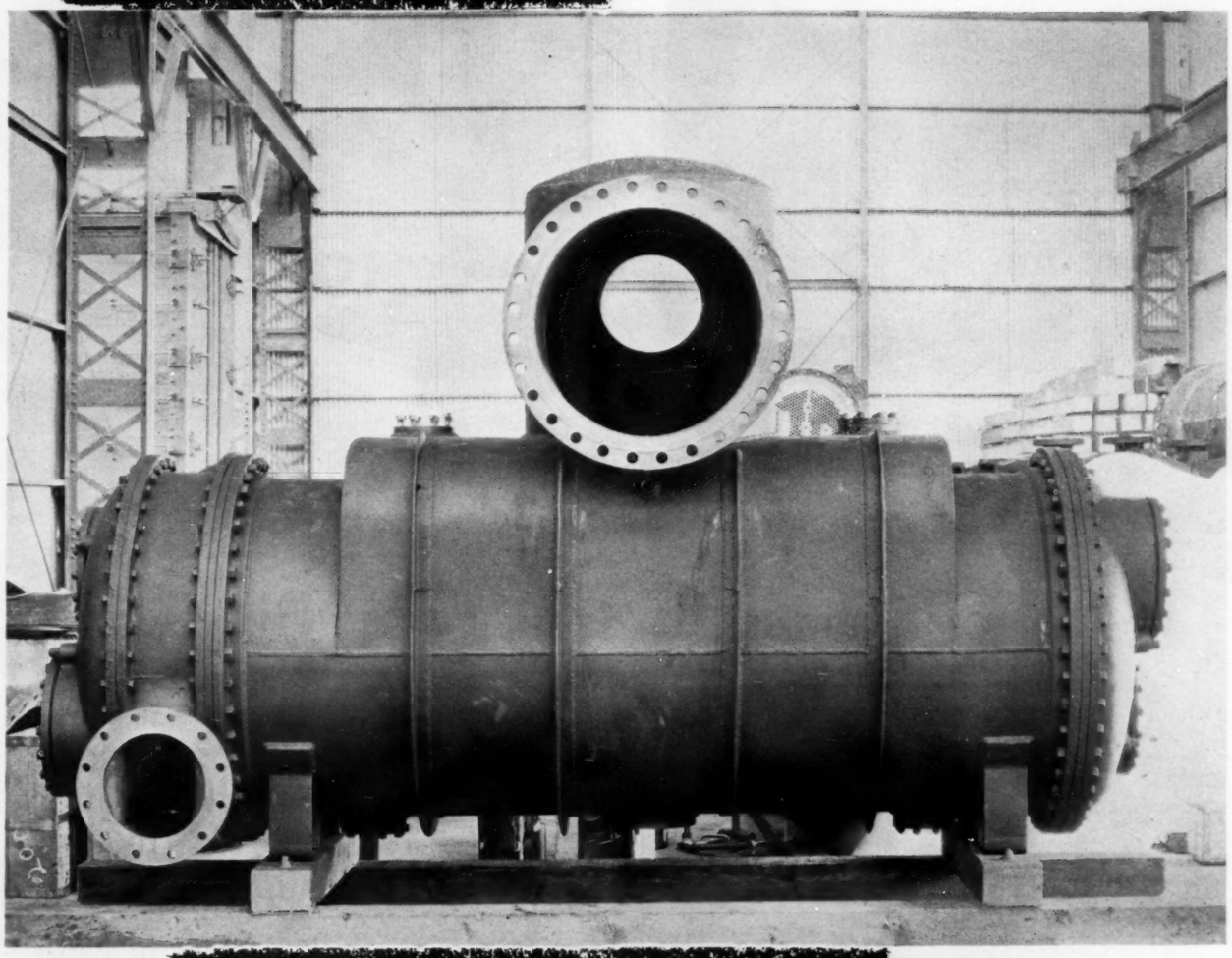

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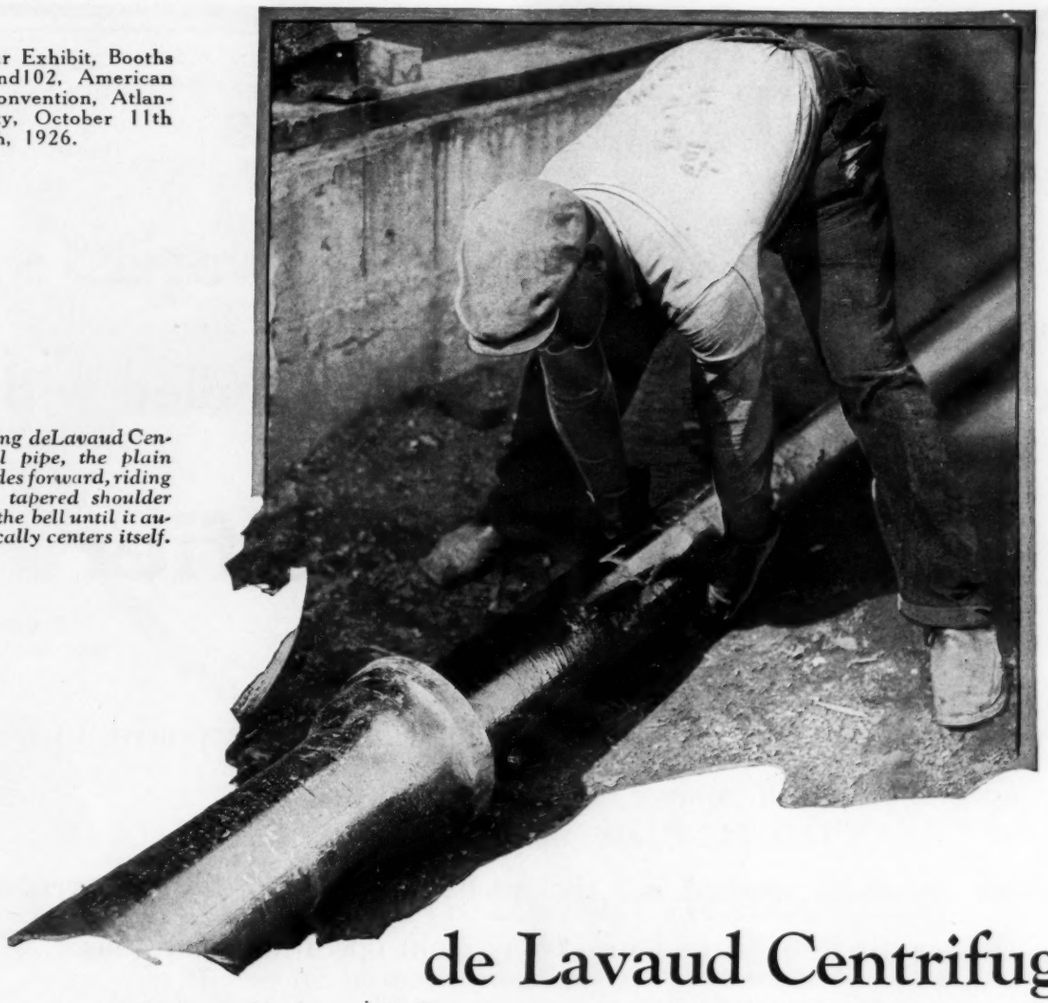
See our Exhibit, Booths 101 and102, American Gas Convention, Atlantic City, October 11th to 15th, 1926.



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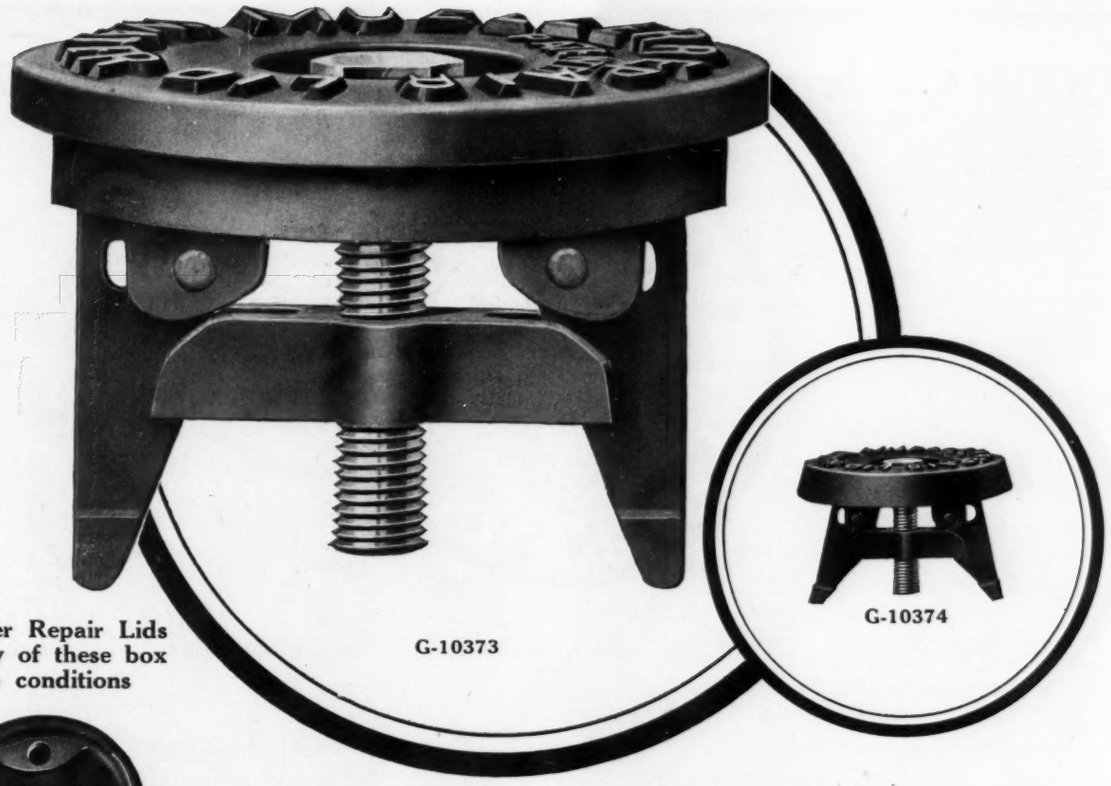

Mueller Repair Lids fit any of these box top conditions

G-10373

G-10374

Lost lid

Broken lug

Broken top

These repair lids fit any condition of the service box top

If your service box tops are in any of the conditions illustrated at the left, Mueller Repair Lids will put them in as good shape as they were originally. Mueller Repair Lid G-10373, shown above, fits all new style Buffalo Service Boxes; while for old style Buffalo Boxes there is Repair Lid G-10374.

These lids are easily attached, requiring only the use of the regular pentagon head key. It is practically impossible to pry them off because of the full length bearing of the two legs with the box shaft. Mueller Lids set flat on the box top and will not tip on edge.

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MUELLER

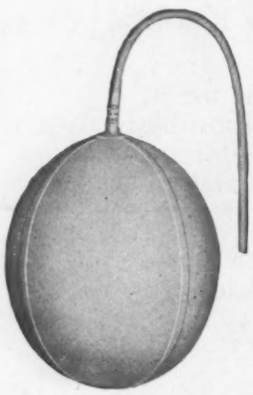
281

GOODMAN *Improved* SAFETY GAS MAIN STOPPER

The GOODMAN STOPPER has grown up with the Gas Industry, and like the Gas Industry, improves as it grows.

The genuine GOODMAN STOPPER is instantly recognized by the name GOODMAN which appears on the Improved Patented Locking Sleeve. All genuine Goodman Stoppers are now equipped with this sleeve. Efficient as the Goodman Stopper has always been, the new locking sleeve makes the shut-off still more effective and positive. Stopper cannot slip—gas cannot pass.

All standard sizes 3″ to 48″ in stock.
Special sizes to order on short notice.



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BUILT IN THREE TYPES

TYPE A—Invisible Seams or Seamless Bag.
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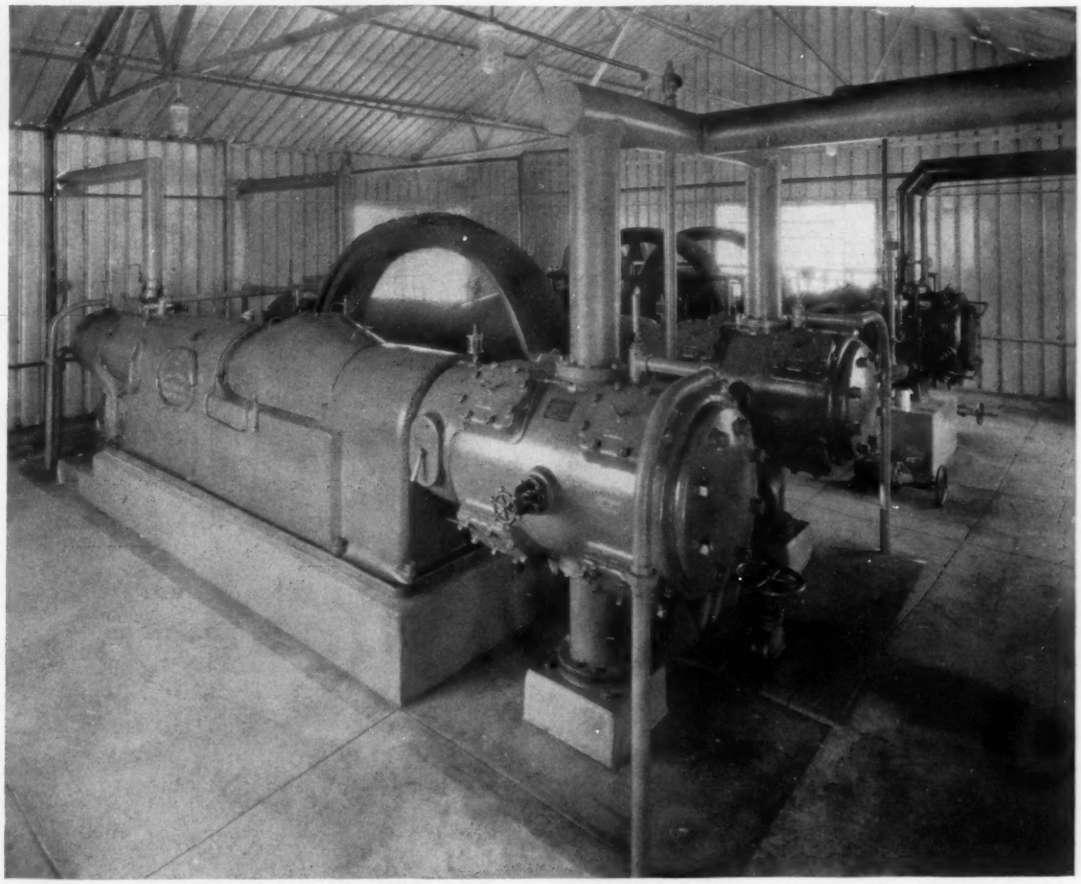

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Two Cycle **Four Cycle**

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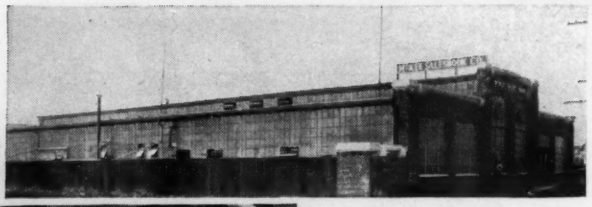

The McKee Salesbook Company, Oakland, California, heats their plant with gas.

Comfortable employees = efficiency

WILL your employees work in a warm, comfortable environment this Winter? They will if you have a group of gas-fired furnaces. For these furnaces will keep your plant at a pleasant temperature.

Gas-fired furnaces can be safely installed in "out-of-the-way" places, as you will see in the photograph. These furnaces are installed right above the paper stock. They can be set in this position for they're clean and safe.

P. G. and E engineers will serve you

Pacific Gas and Electric Company engineers will gladly assist you in solving your heating problems. At all times you are entitled to their advisory service.

The P G and E engineers have information available on industrial heating operations which have been conducted successfully for many years. This service is at your command without cost or obligation on your part.

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P·G·and E·

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by Californians

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Invention of the Dry Gas Meter

TO an Englishman by the name of Richards goes the credit for the invention of the Dry Meter. Richards saw the impracticability of the "wet drum meter" and to meet the demands of the gas industry of his day, brought forth his improved instrument in 1843.

Richards' meter was perfected several years later by Thomas Glover, another Englishman. The improved device became and is still known as the **Glover two-diaphragm, slide valve meter.**

This meter has played a prominent part in the advance of the Gas Industry during the past 80 years. No one other product has contributed so materially to the success of the business as has this accurate measurement device.

Many improvements have been made on the Glover Meter, both in mechanical efficiency and increased capacity with slow speed of operation, yet the fundamental principles of its construction have remained unchanged.

Since Thomas Glover's time gas measurement experts and engineers have striven in vain to produce a house type meter at a moderate unit cost which would improve on Glover's product in continuous accuracy and in low maintenance cost. That none have succeeded during all these years is indeed a tribute to the inventor.

Pacfic Meter Works

of the
American Meter Company, Inc.
Northwestern Representative

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PORTLAND
Northwestern Gas and Electric Equipment Co.

LOS ANGELES
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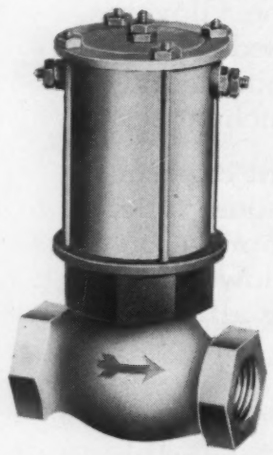
Every Gas Heated Home Needs This Control

THE Erickson TEL-O-STAT

Actual size 1¾x3¾ inches.



THE Erickson GAS-O-TROL

Actual size 2⅜x4¾ inches for ⅜ inch pipe

LAST month in this magazine we announced the Erickson Tel-o-stat, the first moderately priced thermostat to be equipped with a signal light which tells when the furnace is burning.

We are pleased with the hearty reception this new device has received from the gas heating trade, which has far exceeded our expectations.

The Erickson Tel-o-stat actuates the well known Erickson Gas-o-trol on the furnace, the combination forming a fully automatic control at a price comparing favorably with the old push button method.

The indicator on the Tel-o-stat can be set for any desired degree of temperature and the Gas-o-trol maintains this temperature uniformly by shutting the gas flow off and on as the temperature in the home rises or falls, resulting in a substantial saving in gas.

Now is your opportunity to capitalize on the popularity of this perfect control. Stocks are available in all principal cities on the Coast.

Simple to install — *No guessing temperature*
Economical to use — *Attractive in appearance*
No overheating the home — *Turns off completely at night*

The watchdog of your gas meter

Also
Pacific Coast Distributors for

The "MINNEAPOLIS" HEAT REGULATOR

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Complete catalog and name of nearest dealer on request

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and above all — that's what a meter must be

Metric Orifice Meters have been designed so that the cumulative error from any twisting or bending action, or play in joints shall never exceed ¼ of 1% in the calculated results: 99.75/100% accurate!

Fluctuating flows do not affect this accuracy. They are silent, faithful clerks, daily turning in their report, upon the exactness of which you can confidently rely.

On the lease, in refinery or station, measuring oil, gas, steam or water, you will see them in the service of those who demand equipment, the reliability of which has been established beyond dispute.

METERS

Literature fully descriptive of all types of Metric Meters will be gladly furnished.

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Sales Service

DALLAS TULSA LOS ANGELES

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of the American Meter Company-Inc.

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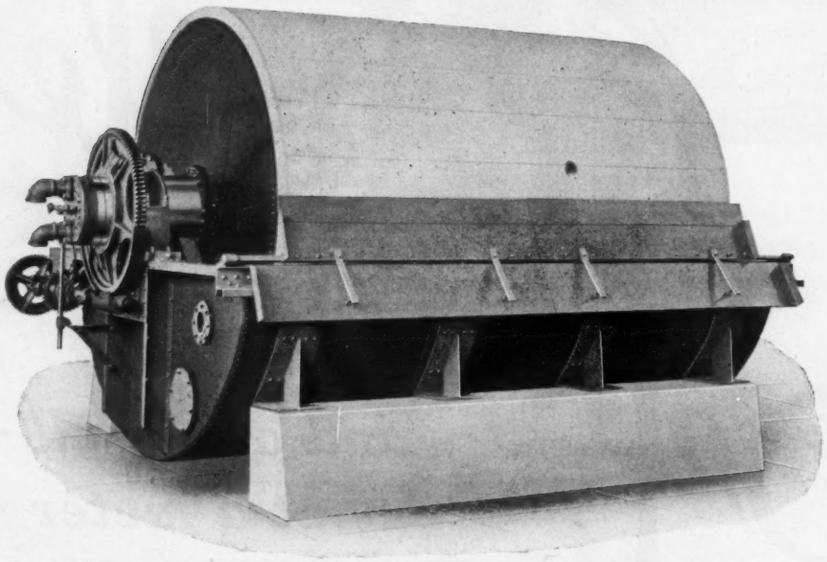
or burned in the boiler-room

Lampblack Dewatering

is a problem in every Oil-Gas Plant



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Los Angeles Gas & Electric Company
Portland Gas & Coke Company
Central Arizona Light & Power Company
New Bedford Gas & Edison Light Company

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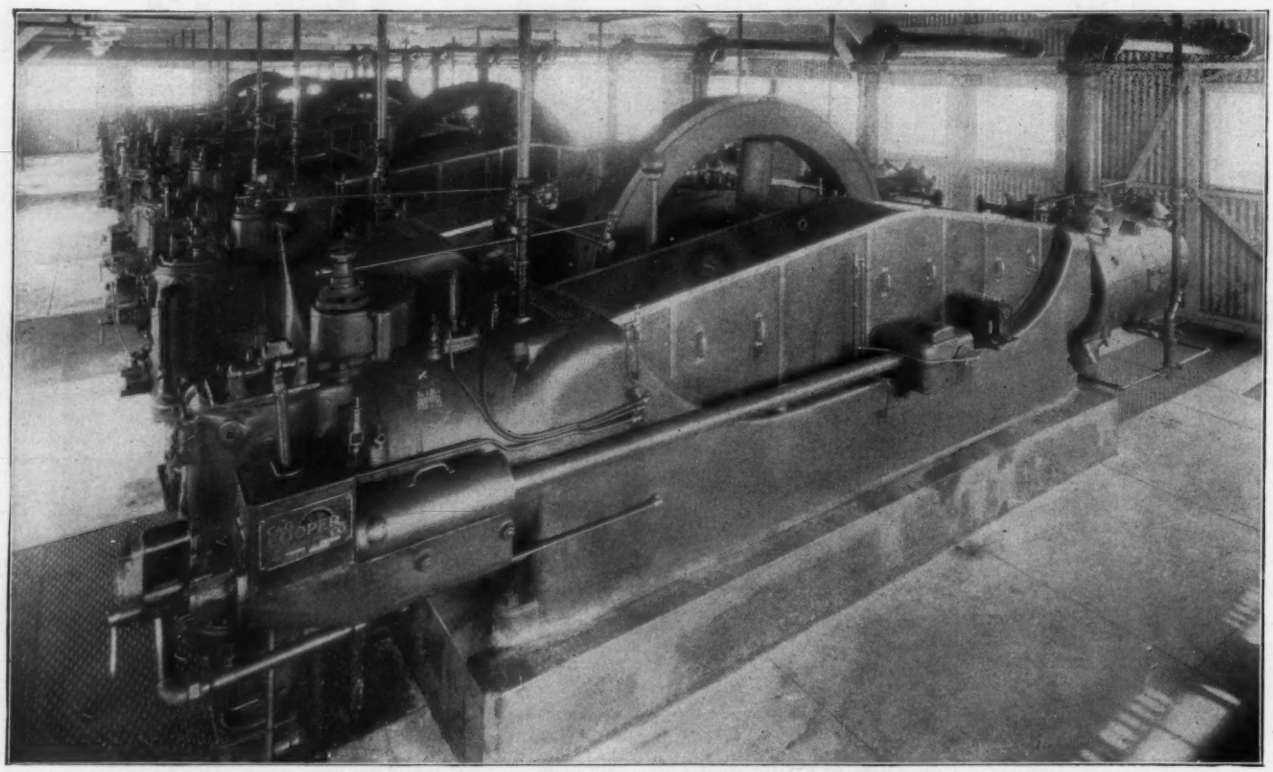
COOPER



There is one class of men who never tire of boosting Cooper Engines. They are the plant operators and they sum their reasons all up in one word ACCESSIBILITY. To them it means less work, less trouble, more hours on the load better operating records and greater appreciation from the "higher ups."

The above installation photograph shows five Cooper Type-80 gas engine driven compressors recently installed by one of the largest oil companies on the Pacific Coast.

THE C. & G. COOPER COMPANY

Bank of Italy Bldg., Los Angeles, California

Dallas, Texas **HOME OFFICE, MT. VERNON, OHIO** **Tulsa, Oklahoma**

WESTERN GAS

A Monthly Journal of the Gas, Gas Appliance and Natural Gasoline Industries in the *Eleven Western States*

A. G. A. Meet Close *at* Hand

Week *of* October 11 Will Find Gas Men *of* Nation *in* Atlantic City *for* Annual Sessions. Western Man *to* Head A.G.A. *in* 1927

FULL announcement of program particulars for the American Gas Association's eighth annual convention will not be made until the delegates register at headquarters on the Million Dollar Pier, Atlantic City, on October 11.

Each of the six sections which make up the A. G. A. organization has arranged its program, drawing upon the specialized gas talent of the country for features which will make the trip to Atlantic City richly repay those who attend, no matter how distant their point of departure. Gas men find in the section meeting the close contact with their specific problems, which the general session, important as it is, does not impart. The A. G. A. sectional programs have been closely integrated by the general program committee, and will develop the same theme which will center Convention thought in the general sessions—the Three-to-Five-Year Program.

THE theme of the Convention will be the Three-to-Five-Year Program on which members of the American Gas Association organization have been concentrating their thought in the past months. Programs for the sessions of the six A.G.A. sections have been shaped to develop this same theme, and the result should be a definite goal for achievement by the gas industry in the years immediately ahead.

ACCOUNTING SECTION

Among the more important reports to be presented during the three sessions of the Accounting Section are those of the Relations with Customers Committee, the Statistics and Cost Accounting Committee, the Store Room Accounting and Inventory-Taking Committee, and the Committee on Uniform Classification of Accounts. G. A. Burrows will present a paper on "The Customers Accounting System of the Consolidated Gas Company of New York," which will hold unusual interest.

As a part of the A. G. A. Exhibit, the Accounting Section will have an exhibition of modern accounting methods occupying 450 square feet, the display being the fifth consecutive one of its kind conducted by the Accounting Section.

In the scope of the Commercial Section program will come every problem encountered by gas utility sales departments. No printed reports will be read during the three sessions of the Commercial Section, though these reports will be widely distributed. Committee chairmen will introduce new matter for discussion, and a program of special addresses has also been prepared. This speaking program includes Floyd W. Parsons, editorial director, *Gas Age-Record;* C. C. Curtis, Fall River Gas Works Company; S. T. Heed, Electric Household Utilities Corp., formerly the Hurley Machine Company; Bernard Johnson, editor, *American Builder;* and R. M. Gallagher, chairman of the A. G. A. Testing Laboratory Managing Committee.

Alexander B. Macbeth
Nominee for 1927 Presidency of American Gas Association

BLUE STAR CAMPAIGN

At the third session on Thursday afternoon, October 14, will be presented a paper on "The Blue Star Campaign," offered by representatives of three companies now actively engaged in promoting this important agency for the stimulation of sales.

The Industrial Gas Section will also have three sessions. Among the timely subjects to be presented are the following:

"Organization and Operation of an Industrial Gas Sales Department," by D. A. Campbell, Kansas City Gas Co.; "The Industrial Gas Sales Department and the Gas Company," by C. E. Paige, Brooklyn Union Gas Company; "Malleableizing Kiln at Northwestern Malleable Iron Company," by Geo. Blakney, Northwestern Malleable Iron Company; Description of Rotary Carbonizing Machines," by S. F. O'Neill, Link Belt

(Continued on Page 59)

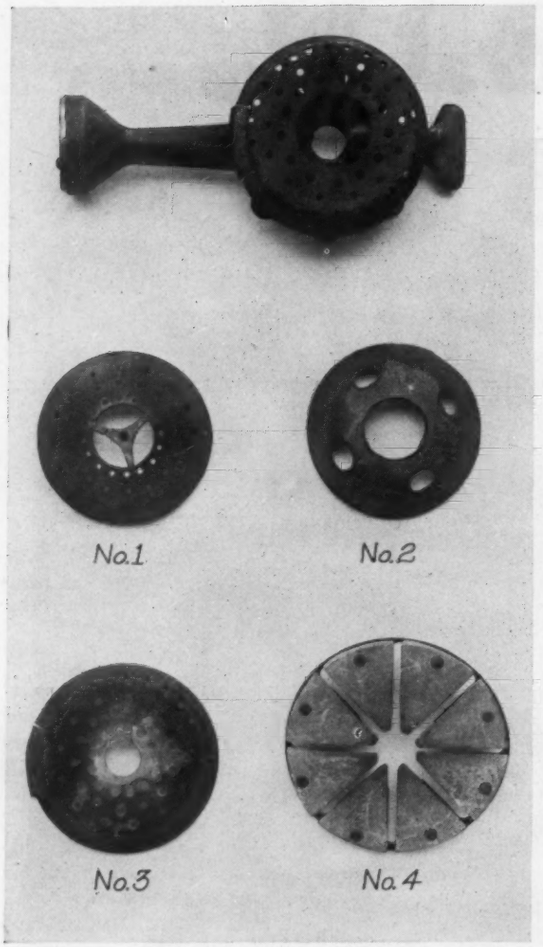


Figure 1. Several types of gas savers

Health Hazards

from Ranges Equipped *with* Gas Savers, Filtering Flues, *and with* Improperly Installed Solid Tops

By WALTER M. BERRY

Chief Engineer, California Gas Research Council

¶ The author of this discussion is unusually qualified to treat the subject in hand, having had extensive experience in the testing of gas appliances as gas engineer for the United States Bureau of Standards. Mr. Berry's present paper was prepared as a lecture in the Gas Appliance Association's recent school for salesmen of gas appliances.

OLD traditions die hard, and we still find the public reluctant to believe that the gas companies are interested in encouraging efficient use of gas. Any adverse publicity by the gas companies aimed at appliances or devices advertised as gas savers is therefore received with considerable skepticism, and the gas companies find it better to let the public discover for themselves the facts concerning these appliances than to waste their efforts in giving advice that is not wanted nor appreciated.

The appliance men, on the other hand, must for their own protection interest themselves in the accessories and devices that are installed on their appliances by the consumer, since such devices may very materially change the operation and safety of the appliance.

GAS SAVERS

Of all gas-appliance accessories sold to the housewife, the so-called gas savers are probably about the worst. The use of these devices invariably causes a spreading and lifting of the flames to such an extent that smothering of the flame results when a utensil is placed above the burner. Under this condition the combustion of the gas is incomplete, and a considerable amount of carbon monoxide is produced. With more modern ranges the burners are placed just as close as safety will allow, and the use of the savers introduces a real danger due to imperfect combustion of the gas.

A series of tests was made on different samples of gas-saving devices to determine the amount of carbon monoxide produced, as well as the effect on the efficiency of burner operation. The burner used in these tests was a regular front burner of the star type. It was 1⅜ inches below the top of the grid, the average distance in stoves used with manufactured gas. The burner was adjusted to average practical conditions. The flame was of medium hardness, such as is generally considered a good type of flame.

Efficiency tests were made, and the products of combustion were analyzed with the burner alone, and with each of four types of gas-saving devices shown in Fig. 1. Nos. 1 and 2 are made of cast iron; No. 3 of pressed steel; and No. 4 of soapstone on a steel frame. The results of the tests are given in Table 1. The values showing the efficiency obtained, as shown in the table, clearly prove that there is no justification for the exaggerated claims of economy made for any of the gas-saving devices tested.

At the smaller rates of consumption (slower rates of heating) gas saver No. 2 shows, however, an appreciable increase of efficiency, but this apparent advantage is completely offset by the odor given off and the large amount of carbon monoxide produced. Considering the fact that 0.04 per cent carbon monoxide in the atmosphere is the maximum amount that should be tolerated, even for an hour or two of exposure, it is readily calculated that the concentration in an unventilated room of ordinary size soon becomes very dangerous and unhealthy, if any of the gas-saving devices are operated for a short period of time.

If several gas savers are used at the same time, the hazard becomes greater. Notwithstanding the fact that these tests were made in a large and well-ventilated room, the persons making the tests experienced severe headaches.

TABLE I. TESTS OF GAS-SAVING DEVICES
Utensil 1⅜ Inches from Burner

	Gas Rate B.t.u Hr.	Efficiency Per Cent	Carbon Monoxide Produced Cu. Ft. Hr.
Standard burner without Saver	8920	36.5	0.0
Burner with Saver No. 1	8910	37.5	0.93
Burner with Saver No. 2	8040	39.5	0.99
Burner with Saver No. 3	7940	36.0	1.07
Burner with Saver No. 4	8025	35.6	1.66

A summation of the results of these and other tests showed that no marked increase of efficiency can be expected where these devices are used. In cases where the burners are far below the grid or where the pressure drops far below that for which the burner is adjusted, some increase in efficiency will result, but this increase is in no case very large and can in no way justify the claims of economy made by the makers. Furthermore, these devices break up the flames as they leave the ports, mix the flames into one mass, and by so doing exclude to a large extent the supply of

secondary air necessary for complete combustion. The poor aeration of the flame results in rapid liberation of carbon monoxide in sufficient quantity to be a positive menace to health.

The following letter relates a severe case of chronic carbon monoxide poisoning resulting from the use of a range equipped with savers. In this range the burners were placed very close to the grid, and the saver practically closed the hole in the center of the burner and prevented the flow of secondary air to the flame.

"I am replying to your letter asking the condition of my health before and since a member of your staff was here November 27, 1923, and fixed and showed me how to use my gas stove. We have been living in this apartment for four and one-half years, and for about three years I had suffered with severe headaches, was weak and tired all the time, and was just as tired in the morning as when I retired at night. I was often sick at the stomach and couldn't eat, and many times I was in bed two or three days at a time. During this time and up until a member of your staff fixed my stove, I was going to my doctor about two or three times a week for treatment. The doctor said the reason for my severe headaches was that I was anemic and he was giving me tablets containing iron, which did me no good. At one time he thought I was getting tuberculosis and ordered me to stay in the air and sunlight and gave me a tonic. Shortly before the stove was fixed I was suffering with dizziness and at times it would get so bad everything would cloud in front of my eyes. I mentioned this to the doctor and was told that it wasn't natural for me to be suffering like I was and he ordered me to have my eyes examined.

Since the stove has been fixed I haven't suffered with those severe headaches, have stopped going to the doctor, also I have stopped taking medicine of any kind; I am never sick or tired and feel fine, and I must say this is certainly marvelous after being sick so long. I almost failed to state that I have gained three pounds in weight."

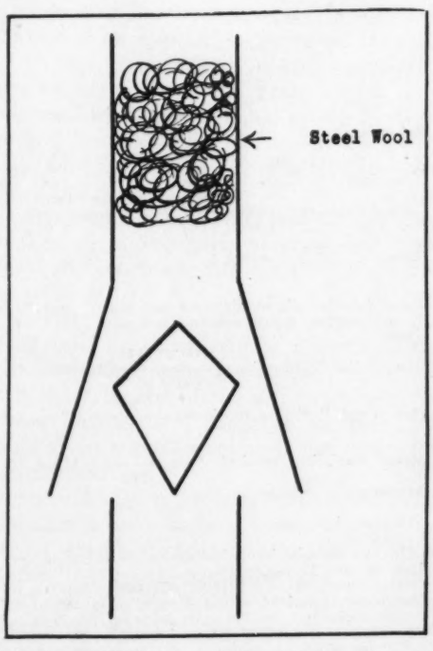


Figure 2. Filtering flue

FILTERING FLUES

Another type of accessory sold quite extensively in the East is the "filtering flue," shown in Fig. 2. This device, it is claimed, will eliminate the necessity of flue connection of gas ranges. The steel wool within the flue is supposed to absorb all the dangerous products and remove all the grease escaping from the oven that would otherwise discolor the walls of the kitchen.

Actual tests showed that as an absorbent of grease the steel wool was of no value whatsoever; and as for removing any dangerous combustion products, it is, of course, ineffective. Some of the objectionable features of these devices are (1) they give the consumer who buys them in good faith a false feeling of security; (2) they interfere with the natural draft of the oven, and cause poor results in baking, and perhaps cause incomplete combustion.

SOLID TOPS

The subject of solid tops versus grid tops should be discussed from two independent viewpoints: (1) that of efficiency; (2) that of safety. I shall touch very briefly on the question of relative efficiency because that is the least important one in this discussion. Naturally we want our appliances to be thermally efficient; but from the consumer's viewpoint, thermal efficiency is perhaps the least important factor in considering the relative merits of different types of gas ranges.

Solid tops are bringing back to the modern housewife the features that our mothers valued so highly in the old wood or coal range—namely, the large smooth clean solid top, having areas of different temperatures. These prized features may be of considerable importance to many housewives, and something in thermal efficiency may very well be sacrificed to secure them. The solid top range has introduced an added element of service, and the slight additional gas consumption, if any, is not sufficient to materially affect the gas bills. It must be pointed out, however, that although the quantity of gas required may not be appreciably greater it is not likely to be any less with the solid top, and the advertisements we usually see stating that one burner will do the work of three do not mean that only one-third as much gas will be required.

It may be of interest to show what may be expected of a typical range of each design, since, as far as I know, there have been very few figures published that show comparison.

TABLE II—B.T.U. REQUIRED TO HEAT TWO QUARTS OF WATER TO BOILING AND TO MAINTAIN GENTLE BOILING FOR ONE HOUR WITH UTENSILS COVERED.

Average Heating Value of Gas 580 B.t.u.

	Gas Required Required to Heat from 70° to 212° F.	Gas Rate Required to Maintain Gentle Boiling	Cubic Feet of Gas Used	B.t.u. Used Per Utensil
GRID TOP				
	2.66	2.08	4.74	2725
PERMANENT SOLID TOP				
Burner with solid lid	5.58	3.97	9.65	5600
Lid removed	4.16	3.16	7.52	4370
Lid and grid ring removed	2.89	2.57	5.46	3170
Utensils clustered over solid top:				
3 utensils	10.97	6.98	17.95	3465
5 utensils	22.67	13.05	45.72	5400

In fairness to the manufacturers of solid top ranges it should be stated that in making any comparisons of efficiency one should keep in mind that the quantity of gas used for top-burner cooking alone is perhaps only a half of the total gas used in the range, and a solid-top range with a good oven may in actual use require less total gas than a grid-top range with inferior oven.

Coming now to the question of safety of solid-top ranges, we must make a very clear differentiation between ranges that are designed for solid tops and those that are built for grid tops and later converted to solid tops.

A gas flame burning under a solid top is operating under conditions somewhat similar to those found in the oven. With normally good adjustment of an oven burner and no undue restriction to the escape of products, such as produced by the filtering flues just discussed, good combustion is secured, and no special hazards are produced thereby, even when the products are allowed to escape into the room. However, if the adjustment is bad—that is, if the burner is getting too much gas or the flame is not getting enough air, the combustion is not perfect, and dangerous quantities of carbon monoxide may be liberated.

The grid-top ranges have the advantage that the flame is visible and under constant observation, and the flame size

(Continued on Page 56)

INSULATION
A Factor *in* Gas House-Heating

By WILLIAM L. HOYT
American Gas Products Corporation

Mr. Hoyt delivered this paper before the Commercial Section of the Pacific Coast Gas Association Convention at Pasadena.

GAS house-heating with its sales and distribution problems is a subject of great interest to the gas fraternity. We are all endeavoring to devise ways and means of breaking down the sales resistance encountered by the men in the field and to lessen the load on the plant and distribution system. If we are in a position to show a prospective home builder how to build his house so that he may enjoy the many comforts and conveniences of gas heating with a low fuel bill and with a materially decreased demand on the distribution system and plant capacity we have accomplished a great deal. Insulation will make this possible to a large extent in the new house field.

The value of insulating material has long been known wherever heat conservation is of importance, but until recently its use has been confined to the industrial field. Of late, however, a further need has been recognized and the leading insulating companies are now offering several types of material constructed especially to conserve heat in homes and public buildings. The various types of insulation now in use for homes derive their insulating value from millions of minute dead air cells contained in the material. There are four main types briefly described as follows: Boards or sheets composed of insulating material in compressed form generally used in place of lath as a plaster base and as a substitute for sheathing; quilts composed of the insulating material held together by some form of treated paper and used in place of the standard forms of building paper; powdered material that is poured either dry or wet between the studding and a semi-rigid compressed form that is flanged between the studding.

Where insulation is used as a substitute it should have the essential qualities of the material it replaces such as structural strength and a good bond with plaster. Care should be used not to compress the quilted type to the detriment of its insulating value and where the powdered form is used the density should be as uniform as possible. The flanged type should fit the studding snugly to take full advantage of the two air spaces formed and also the surface resistances. All the materials should be fire-resistant, non-absorbtive and unaffected by moisture, permanent in form and reasonable in cost.

The value of insulation may be readily realized by the following comparison between the usual house construction uninsulated, and the same construction insulated. A wall consisting of 7/16-inch clapboards, 3/4-inch sheathing, studding, lath and plaster has a B.t.u. transmission per square foot per hour degree difference in temperature of .25. The same wall with insulating material having a transmission of .2 B.t.u. added, has a transmission of only .11 B.t.u., or a saving of over 52 per cent. An eight inch brick wall, furred, lathed and plastered, transmits .26 B.t.u. per square foot per degree difference in temperature per hour. With addition of insulation as in the frame construction, the wall transmits only .11 B.t.u., again reducing the heat loss by over 52 per cent. Similarly a roof composed of shingles and sheathing on rafters, transmitting .35 B.t.u., has a heat loss of only .127 B.t.u. when insulated as in the other examples, a saving of better than 63 per cent. These savings apply only to the walls and roof, as insulation has no effect on the heat loss through the doors and windows and by infiltration or air change.

Two- or three-story rectangular or square homes are most easily heated, the savings from insulation in these houses ranging from 25 to 30 per cent. Buildings of more complex design with large wall and ceiling areas, particularly one-story bungalows, use more heat and as a consequence insulation effects larger savings, in some cases going as high as 40 per cent.

Careful records have been kept by insulation manufacturers and gas companies for the past two heating seasons on insulated homes and the theoretical and actual figures have been so close that it is safe to figure prospective new homes in the following manner, giving the owner the estimated gas consumption with the house insulated and uninsulated. The figures will sell insulation with very little effort on the salesman's part. In addition to the dollars and cents value of this material from decreased fuel bills the home owner will enjoy a house that is warm in winter, cool in summer as well as fire- and sound-resistant.

Let us take as an example an average seven-room two-story compact house of normal frame construction with dimensions and B.t.u. transmission constants as follows:

Dimensions	B.t.u. Transmission Constant	Air Change Per Hour		B.t.u. Loss Per Deg. Diff. in Temp. Per Hour
Cubic ft. of Contents	12000×.02	1	=	240
Sq. ft. of Net Exp. Wall	1600×.25		=	400
Sq. ft. of Glass	250×1		=	250
Sq. ft. of Ceiling	650×.2		=	130
				1020

The B.t.u. loss per degree difference per hour = 1020
The B.t.u. loss per degree difference per day = 24480
Assuming we are in a locality with 5000 degree days a maximum temperature difference of 50 degrees, 550 B.t.u. gas and a central fired system of eighty per cent efficiency.
Then

$$\text{Season's Gas Consumption} = \frac{5000 \times 24480}{550 \times .80} = 278000 \text{ cu. ft.}$$

$$\text{Hot Water Radiation required} = \frac{1020 \times 50}{150} = 340 \text{ sq. ft.}$$

$$\text{Steam Radiation required} = \frac{1020 \times 50}{240} = 213 \text{ sq. ft.}$$

Maximum hr. demand for Gas

$$\text{Warm Air system} = \frac{1020 \times 50}{550 \times .80} = 116 \text{ cu. ft.}$$

Let us incorporate insulation in the wall and ceiling construction with a B.t.u. transmission constant of .2 per hour.

$$\text{The wall constant now} = \frac{1}{\frac{1}{.25} + \frac{1}{.2}} = .11$$

and

$$\text{The ceiling constant} = \frac{1}{\frac{1}{.2} + \frac{1}{.2}} = .1$$

Refiguring:

Dimensions	B.t.u. Transmission	Air Change		B.t.u. Per Deg. Dif. Per Hour
Cubical contents	12000×.02	1	=	240
Net Exp. Wall	1600×.11		=	176
Glass	250×1		=	250
Ceiling	650×.1		=	65
				731

B.t.u. loss per degree difference per hour = 731
B.t.u. loss per degree difference per day = 17544
Then

$$\text{Season's Gas Consumption} = \frac{5000 \times 17544}{550 \times .80} = 200000 \text{ cu. ft.}$$

$$\text{Hot Water Radiation required} = \frac{731 \times 50}{150} = 243 \text{ sq. ft.}$$

$$\text{Steam Radiation required} = \frac{731 \times 50}{240} = 154 \text{ sq. ft.}$$

Maximum hr. demand for Gas

$$\text{Warm Air system} = \frac{731 \times 50}{550 \times .80} = 83 \text{ cu. ft.}$$

In this example insulation effects the following savings of over 27 per cent:

Gas consumption	278000—200000=78000 cu. ft.
Hot water radiation	340 sq. ft.—243 sq. ft.=97 sq. ft.
Steam radiation	213 sq. ft.—154 sq. ft.=59 sq. ft.
Maximum hour demand for gas warm air system	116—83=33 cu. ft.

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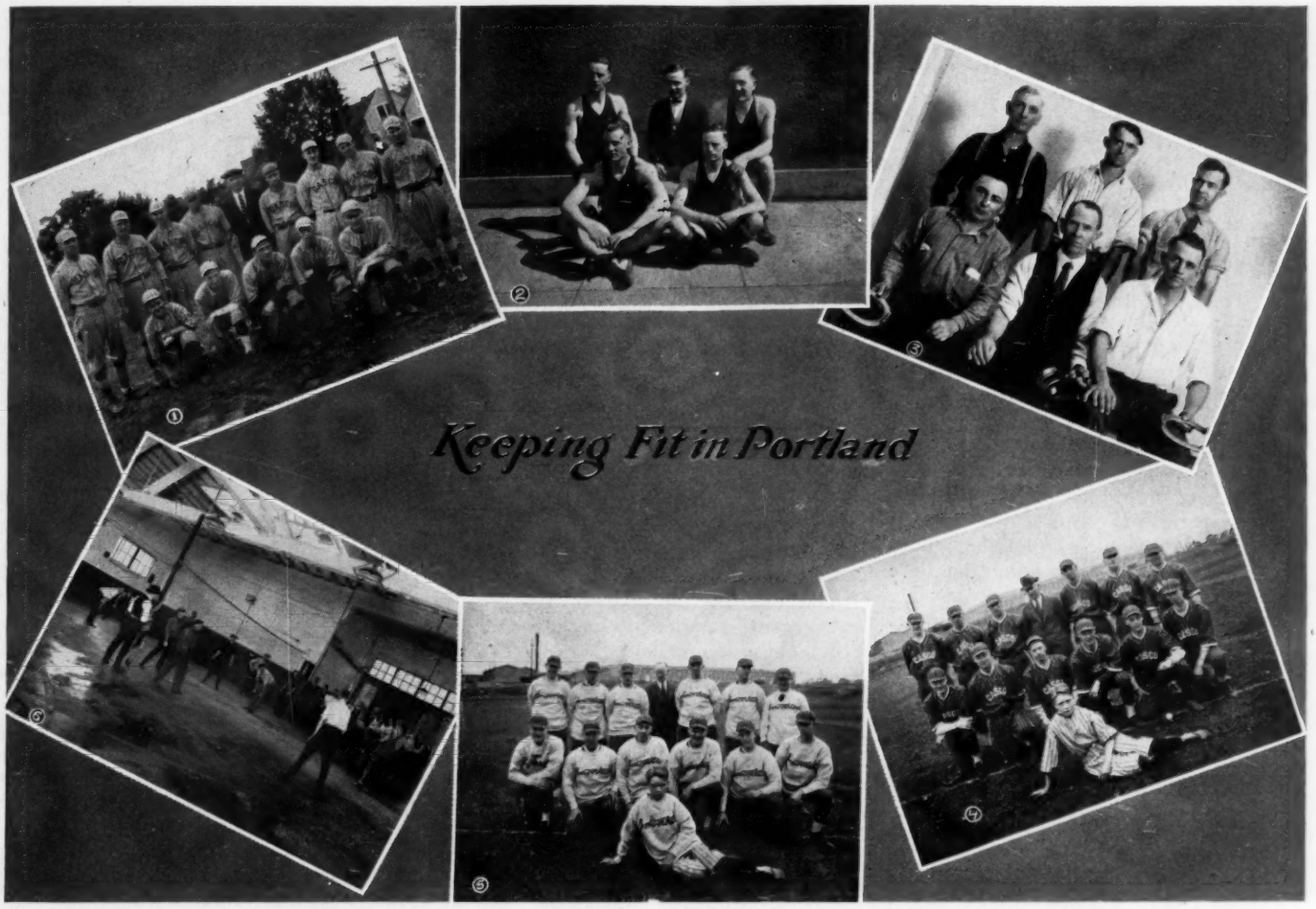

Read Mr. Miller's article for a description of the individual photographs above

Industrial Athletics *in a* Gas Company

By C. R. MILLER

Superintendent of Utilization and Director of Athletics, Portland Gas & Coke Company

IN 1922 industrial athletics were organized in Portland, Oregon, in the form of an association, governed by 12 directors selected from as many different industrial concerns. From a relatively small organization it has grown by leaps and bounds until there are now in excess of 70 firms who contribute to its support and success.

Tournaments in base ball, basket ball, tennis, horse shoes, golf, bowling and volley ball, constitute the major activities.

The Portland Gas & Coke Company entered into the spirit of the activities in the same thorough, painstaking way that is characteristic of the utility's way of doing business and has since the beginning given a good account of itself in all departments.

Appropriate suits, regalia and other paraphernalia, such as bats, balls, the association fees and assessments are all provided for by the company and the playing and practice periods are all carried on after working hours.

During the five years that the Gasco boys have participated in industrial athletics, they have won 11 league trophies, three grand championship trophies and two association trophies, as grand champions in the majority of sports. The interest displayed in this athletic program is very marked indeed with our organization. Those athletically inclined derive a great deal of satisfaction in being associated with our winning teams and the support given the different teams by the balance of the organization is gratifying. Although our pay roll is relatively small when compared with utilities in some of the cities on the Coast, it is not uncommon to see from 150 to 250 loyal Gasco rooters on the sidelines cheering their team along. Athletics is one branch of our business where we all meet on common ground and we firmly believe that such a program, successfully carried out, has a very marked tendency in maintaining an employees' morale, the value of which can hardly be over-estimated.

Photograph No. 1 shows the Portland Gas & Coke Company's 1922 Grand Champions, who went through the season with but two defeats.

Photograph No. 2 shows the Gasco Basket-ball team which has been runners up for three seasons.

Photograph No. 3 shows the Gasco Horse-Shoe 1925 Grand Champions.

Photograph No. 4 shows the 1925 Grand Champions in full regalia.

Photograph No. 5 gives the 1926 Association Champions. These boys closed the year for the Gasco crowd without a defeat. In the five years, they have played 62 league games, winning 59 which gives them a standing in excess of .900.

Photograph No. 6 shows one of our bureau elimination contests in volley ball. The Gasco volley ball official team has to its credit numerous industrial and community victories.

Refrigeration *by* Gas-Operated Apparatus Has Passed *the* Experimental Stage

By J. H. GUMZ
Chairman, Committee of Refrigeration
Pacific Coast Gas Association

Gas refrigeration, says this report, has been delayed because gas companies persisted in regarding it as visionary. Now it is here, and persistent sales effort will be required to introduce it. The accompanying paper was presented at the P. C. G. A. convention at Pasadena, and comes from a committee comprised of Charles Carlson, Ray Trowbridge, D. S. Kelleway and J. H. Gumz, chairman

THE subject of refrigeration by gas is one that has received study by engineers and gas men for the past 15 years or more. Only in the past three years, however, has interest in the subject reached a point which would indicate that the gas industry in general considered gas refrigeration as something more than merely an interesting experiment. But a few leaders of the industry have been farsighted enough to realize that conditions are rapidly changing and that business we enjoy today may easily be lost to us tomorrow.

The national tendency of the American people is to constantly strive to do less and less work and to make living more easy and comfortable. The utilization of gas for house heating contributes to realization of this tendency and the winter peaks of many gas companies amply demonstrate that many of us enjoy our ease and comfort. Any gas man knows what a "peak" means and what would be more natural for him than to look about for something to offset it. If the peak is due to heating in winter, the obvious thing to do would be to build a similar load during the summer for cooling and so flatten the load curve. As gas refrigeration had been talked of for years it was felt that possibly the summer load problem could be solved by developing such utilization.

DEVELOPMENT SLOW

There were one or two gas refrigerators on the market as long as eight years ago, but they all had their drawbacks and consequently a very limited production and distribution. Improvements and developments were slow, due largely to the attitude of the gas companies in considering the gas refrigerator a toy. Fortunately, H. DeWitt Valentine of the Peoples Gas Stores Company of Chicago interested himself in the proposition and due to his enthusiasm, study and hard work, the gas refrigerator has made tremendous strides towards perfection. The gas industry, as a whole, owes Mr. Valentine a great deal for his vision, courage and faith in bringing gas refrigeration to its present stage of perfection.

There are, broadly speaking, two methods by which artificial refrigeration can be accomplished—first, the compression system, and second, the absorption or adsorbsion system.

The compression system is well illustrated by the majority of electric refrigerators on the market today. A refrigerant, ammonia, sulphur dioxide ethyl chloride, methyl chloride, carbon dioxide, is compressed and cooled until it becomes liquid. The liquid, in turn, is allowed to evaporate and in this process of evaporation, it withdraws heat from the surroundings. This taking of heat away by the evaporation of the refrigerant is refrigeration. By various devices the process is made automatic and in the several makes of electric compressor machines, use is made of the different refrigerants available. Ordinarily, the compressor type machine has a number of moving parts which result in leaks and eventual noisy operation. The cost of operation is also a matter for careful consideration.

ABSORPTION METHOD

The absorption or adsorption machine makes use of one of the refrigerants mentioned, usually ammonia, and briefly, the process is as follows: The refrigerant is first dissolved or absorbed in a liquid. In the case of ammonia, water is used as the absorbing agent, because at 70°F. one volume of water will absorb 654 volumes of ammonia gas. Starting with a solution of ammonia in water, heat is used to drive off ammonia in the form of gas, which is then cooled until it liquefies. This liquid is then permitted to evaporate and in the evaporation heat is taken away from the surroundings. This, in general, duplicates the cooling effect obtained in the compression type machine. The ammonia gas is then reabsorbed in the water from which it was driven off by heating, and the cycle is ready for repetition. There are no moving parts, aside from an automatic device in some machines and consequently the operation is noiseless and there is no wear. The foregoing description is general in the extreme, and as the gas refrigerators of today have reached a development which involves refinements and modifications of a very technical nature we will not discuss that phase. In explanation, however, of the word "adsorption" which was used along with absorption, it is sufficient to say that the refrigerant used in the machine is collected on the surface of a solid instead of being dissolved or collected in a liquid. The machine utilizing this principle is very similar to the absorption type machine.

MACHINES NOW ON MARKET

At this point it would be well to mention briefly the several machines being developed for the market at the present time.

The "Commonsense" Ice Machine made by the Common Sense Ice Machine Company of Chicago.

The Sorco Iceless Refrigerator is made by the Sorco Manufacturing Company, Scranton, Pa. Regional manufacturing agencies are to be made. We understand one such is being located in Los Angeles.

The National Automatic Refrigerating device is made by the National Automatic Refrigerator Company, Inc., of Boston, Mass. The Winchester Repeating Arms Company has recently taken over this machine for development and production.

The Servel Corporation has secured the American rights for a refrigerator invented by two young Swedish engineers and this machine is pehaps the most promising of any mentioned. A unit was on display at the National Electric Light Association Convention at Atlantic City. The gas-operated unit will have a box of approximately five and one-half cubic feet and will sell at about $200.00. Modifications and improvements in this machine indicate that it will operate eventually entirely air-cooled and the hourly gas use for a domestic machine will be only about one and a half cubic feet per hour so that vents will be unnecessary. This means, of course, that the cost of installation will be so slight that it will not be a determining factor in the sale.

Progress is taking place so rapidly in the perfection of the gas refrigerator that we believe it would be well to refrain from a discussion of the several

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Legislation and Taxation

PART I

¶ A report submitted to the Pacific Coast Gas Association for the year 1925-1926, by the Committee on Legislation and Taxation. Members of the committee were Norwood W. Brockett, C. P. Cutten, Rufus G. Gentry, Paul Overton and Geo. L. Myers. The committee was chairmanned

By GEO. L. MYERS
Portland Gas and Coke Company

DURING the Association year no legislation was enacted governing gas utilities. The period covered by this report does not include what might be termed a "legislative year," as there were no sessions of state legislatures other than the special session in Washington and no general elections.

It is gratifying to report the Committee finds there is no legislation being agitated specifically directed against gas utilities in Arizona, California, Idaho, Montana, Nevada, Oregon and Washington.

It is regrettable the electrical power industry in California seems likely to be confronted with prospective legislation to be voted upon by the people under the initiative at the forthcoming general election in November providing for ownership and operation by that state of electrical power utilities. In Oregon legislation under the initiative of like purpose has been proposed. It behooves the gas industry to co-operate with the electrical power industry to the fullest extent possible in combating this kind of legislation. The enactment of it would be a step forward toward government ownership, or what might be more appropriately termed "political ownership," of our facilities for the service of heat, transportation and communication and the ultimate socialization of all basic industries.

STATE REGULATION POPULAR

The Committe finds upon inquiry of authoritative sources in Arizona, California, Idaho, Montana, Nevada, Oregon and Washington that there is no organized movement and no agitation seeking a reversion to regulation of public utilities by minor subdivisions of state government. The regulation of our public utilities by state authorities seems to have become a firmly established public policy. Such a public policy has become in fact practically inevitable because of the evolution that has taken place in the public utility industry. The service of our public utilities is no longer municipal in scope, but rather a service intermunicipal and inter-state. This has been the result of our scientific progress and modern forms of corporate organization and the consequent development of large scale operations in the interest of greater efficiency and economy. The ramified operations of our public utilities under regulation by minor subdivisions of state government would be so productive of chaotic conditions as to bring about one of two results—either no effective regulation at all or regulation so conflicting in nature, as to stay the progress of private initiative and enterprise in the improvement and extension of service.

Any organized movement agitating a change of public policy applicable to regulation in the future is more likely to be one of Federal versus State regulation. This would be more logical. However, so long as it is obviously not necessary it is questionable whether Federal regulation would be a more acceptable public policy from both a political and economic standpoint. Gradually but surely experience under State regulation is bringing about the establishment of fundamental principles which will become uniform in application among the various states and which will make possible co-operation among them in matters of inter-state concern. Federal regulation would further entrench bureaucratic government, the growth of which should not be unnecessarily encouraged. Federal regulation would be less comprehensive of local conditions and more dilatory in effect. State regulation can be best relied upon to more promptly respond to local needs and obviously with a better understanding of them.

It is fitting this report should discuss legislation of fundamental importance to the public utility industry which should be of uniform application among the states included within the territory of the Association, namely, the certificate of public convenience and necessity, the indeterminate permit, the regulation by state authorities of municipally owned and operated utilities and the taxation of municipally owned and operated utilities.

THE CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY

The certificate of public convenience and necessity or the grant to state regulatory authorities of the power to permit or deny competition among utilities for identical service is a part of the public utility statutes of Arizona, California, Idaho, Nevada and Washington. Only in Montana and Washington is it not effective.

Competition in public utility service of identical nature is an economic fallacy where rates and standards of service are fixed by regulation. It is axiomatic that such regulation must be predicated upon the principle of a reasonable return upon the fair value of the property used and useful in the public service. Where competition exists there is a duplication of facilities. If such a return is to be earned then it follows that if there is duplication the rates for service must be greater. If such a return cannot be earned by reason of the stress of competition or because the business available is insufficient to be profitably divided then the public suffers, as the service is likely to become less efficient, the ability to make extensions restricted and the cost of capital for improvements and additions greater. The ultimate result is a consolidation or an understanding whereby rates are fixed so as to provide for expenses and taxes and carrying charges and enough more to make the investment of capital possible.

Economic considerations make the service of our public utilities naturally monopolistic. These considerations are the large investment necessary to provide efficient and adequate facilities for service, the obligation to meet all reasonable demands for service, the competition of substitutes, the limitations and normally slow development of markets and the immobile nature of the property. The large investment necessary and the obligation to meet all reasonable demands for service make for so high a ratio of investment to income that the turnover on the capital invested by comparison with other industries is relatively most infrequent. These fac-

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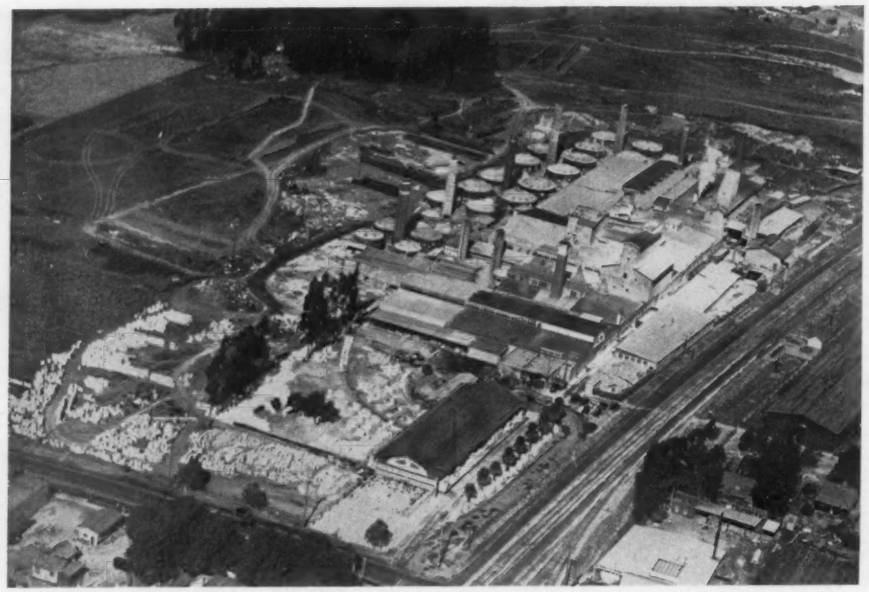


Glendale, Calif., manufactory of the Tropico Potteries Co., on the lines of the Southern California Gas Co., San Fernando Division. A rising demand for tile products is making of the tile industry a rapidly growing factor in the industry of Southern California.

Varied Uses Bring Tremendous Growth *in* Gas Sales

By S. C. SINGER
Manager San Fernando Division
Southern California Gas Company

SAN FERNANDO VALLEY, as served by the Southern California Gas Company, comprises a territory extending southerly from the Ventura County line near Saugus to the Devil's Gate Dam at Pasadena, and spreads from the Angelus National Forest westerly to Hollywood and Moreno Heighlands.

The Division serves some 38,000 consumers, through more than 700 miles of main, in the cities and communities of Glendale, Burbank, Van Nuys, San Fernando, Newhall, Girard, Owensmouth, Holly Park, Saugus, Pacoima, Reseda, Zelza, Universal City, Sunland, Tujunga, La Crescenta, Montrose, Flintridge, a portion of Eagle Rock, Atwater Park, and Los Angeles City south to Moreno Highlands.

For the sake of economically handling the needs of the public in this Valley, the San Fernando Division of the Southenr California Gas Company was organized in 1922, with Division headquarters in Glendale. District offices were rapidly built in Glendale, Burbank and Van Nuys, and an office is now being erected in Lankershim, with collection agencies in San Fernando, Tujunga, and Montrose.

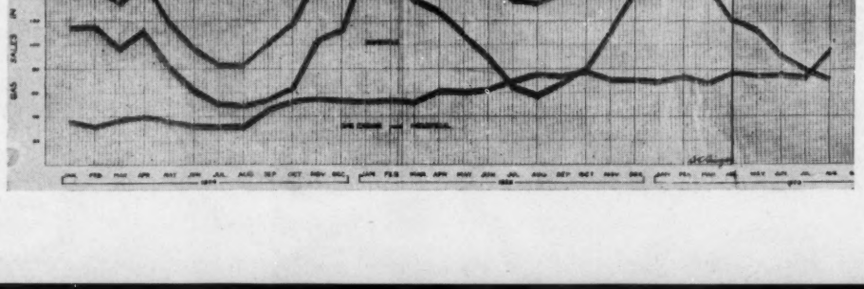
During the past few years a tremendous increase in the number and character of industries has taken place in this Valley. In this success natural gas has played an important part. Space does not permit of an adequate description of these varied uses, but it is of interest to know that gas has been judged the most economical fuel for such purposes as firing boilers at auto wash racks, in beverage plants, china works, concrete tile plants, creameries, dying and finishing works, soap factories, green houses, sanitariums, laundries, oil wells, paving material plants, potteries, steam pumping plants, firing kilns at china works and brick yards, firing steam shovel boilers, operating gas engines for prime motive power, irrigation pumping plants, as well as for firing ovens in large factories, etc. Practically all of the lumber companies use gas for their drying kilns, and all of the fruit and vegetable canneries, with one exception, use gas exclusively for fuel. All but one of the ice companies use gas engines as a prime motive power in their plants in this Valley.

Perhaps the most novel use of gas in the industry field is that by the Universal Picture Corporation and the First National Picture Corporation. In both of these plants, gas is used exclusively for heating the sets, as well as for practicaliy all shop equipment.

North of the City of San Fernando is located the U. S. Veterans Hospital and the Olive View Sanitarium of Los Angeles County. These two sanitariums cover more than 1000 acres, and gas is used for boiler fuel, as well as for all domestic purposes, in the many buildings located there.

All of our large industrial consumers, are serviced periodically by visits from one or more of our engineers, who make it a business to see that gas is used most economically in every case. By means of this service, we not only maintain satisfied consumers, as far as relations with the gas company are concerned, but invariably point out better operating conditions, which permit savings to be made by the various industries studied.

Some idea of the rapid growth in number of domestic consumers in this Valley is indicated by the accompanying curve, a glance at which will indicate a growth from 11,147 domestic consumers January 1, 1922, to 38,014 September 1, 1926—an average increase of 5873 a year.



Natural Gasoline Operato s Make It Possible to Sell Gas Service off the Gas Lines, by Manufacturing

Liquid Gas

By GEORGE H. FINLEY

This fuel, which burns with the same satisfaction as does the product delivered through the gas main, is distributed in many localities. The Imperial Gas Company has agents throughout Southern California who sell "liquid gas" under the name of "Rockgas"—and who sell gas appliances equipped to burn the fuel.

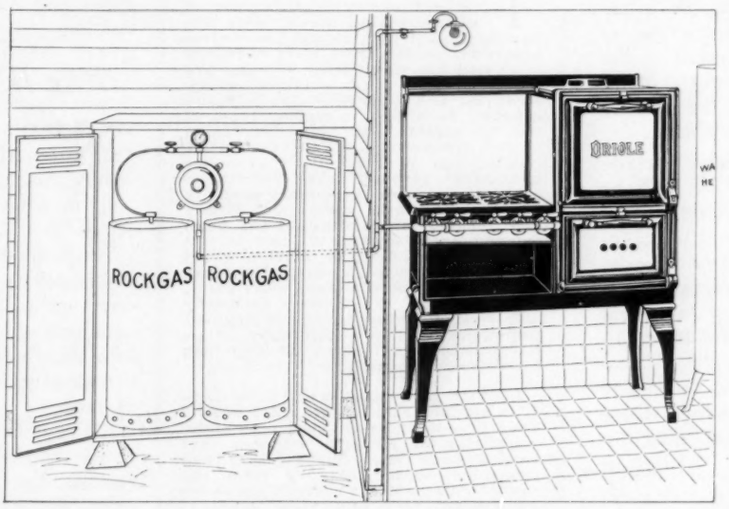
IS THE individual gas tank for gas users who live off the beaten path of natural or artificial gas service just another empty dream? Must those who know the comfort and convenience of modern gas service content themselves with some inferior fuel, just because the gas main cannot be brought to their door?

In at least 30 states of the Union these questions can be answered in the negative. Southern California is one of the few points in the West where gas service from tanks is a reality, and since this is a development of recent time it seems that a layman's description of how the apparent miracle has been brought to pass would have a good deal of interest.

It has come about through the cooperation of natural gasoline operators, distributors of the "tanked" product, and retailers of gas appliances who have taken the product and the appliance for its use to the consumer. One company, the Imperial Gas Company, with headquarters in Los Nietos, near Santa Fe Springs, Calif., has for some little time been marketing a "liquid gas" manufactured in the Long Beach plant of the Standard Gasoline Company, formerly the Pacific Gasoline Company. This same distributing company manufactures and sells a tank unit to contain the product, and sub-agents—gas appliance merchants—have taken divisional agencies for the distribution of the product in conjunction with sale of their particular appliances.

A few readers will follow this far and arrive at the conclusion that another gasoline stove-fuel is going to be described. This is not the case. The liquid gas is marketed for use in ordinary domestic gas appliances equipped with special orifices. It does not burn as atomized liquid, but as an actual gas.

In its liquid state the gas marketed by the Imperial Gas Company might be called a "super-casinghead gasoline." A. N. Kerr, president of the Imperial Gas Company, speaking for the benefit of the writer in terms as non-technical as could be expected, said that his particular product is as far above casinghead as gasoline is above kerosene, or half way to dry gas in the paraffine series. The bulk of the liquid is propane (C_3H_8). It is, of course, highly volatile, is clear in color, and is odorless. Oil of wintergreen is added to the product in its manufacture to give it odor, making possible the detection of leaks. And speaking of leaks—when a leak occurs in a gasoline stove unit, the gasoline is apt to seep and lie dormant, making an explosive mixture. This danger is not present to the same degree in the use of the "liquid gas", which diffuses through the air without forming an explosive mixture.



Showing the tanks, regulator and gauge, which comprise the "liquid gas" outfit. Appliances which burn this fuel have special orifices.

The Southern California product is called "Rockgas", a name adopted for it by an eastern holding company of which the Imperial Gas Company is a unit.

Manufacture of "Rockgas" is a process that cannot be effected in most gasoline plants. Special factors must be present, for the liquid is the product of high fractions, which as a rule are best obtained from gas which has previously been treated in an extraction plant. Thus it is found that the stripper plant, working on gas from high pressure lines, is often able to combine the proper conditions for the manufacture. Such plants, working on residual gas already run through extraction plants, squeeze out the fractions which can be used as gasoline, recompress and cool the rest, which liquifies the butanes that were not extracted as gasoline, and also liquifies the bulk of the propanes. The combination makes "Rockgas".

There are several modifications of liquid gas distributed for domestic use, and Mr. Kerr estimated that it is being shipped into more than 30 states, in localities where the benefits of gas service are not to be had direct from the gas main.

The unit evolved through much research for the most effective storage of the fuel consists of two tanks, a gauge and a regulator. Originally the tank weighed 125 pounds, and cost about $30. Heavy tanks are still used in the East, where a 250-pound pressure must be maintained in them. Tanks now used in Southern California are of 17-gallon capacity, weighing 53 pounds empty and 120 pounds filled. Pressure in the tanks ranges from 70 to 100 pounds. The tanks are of one-tenth-inch thickness, built seamless, and will stand a pressure of 600 pounds to the square inch without bursting, according to Mr. Kerr.

(Continued on Page 40)

PACIFIC COAST GAS ASSOCIATION

A Department Conducted by Clifford Johnstone, Executive Secretary

1927 Committees

THE Section Chairmen appointed by President-elect W. S. Yard, while the Convention was still in progress, are now busily engaged in out-outlining their programs for the year's work. A slightly different plan will be followed this year in appointing committee members, the difference arising in that member companies will be furnished with the complete committee program and given the opportunity of appointing their own representatives on such committees as they may be interested in. If companies co-operate as they should, this plan will result in the formation of very active committees, and have a tendency to improve the already high standard of our Proceedings.

Two special committees have already been partially appointed. One will be known as the "Appliance Information Committee" and its duties will be to co-operate with the Appliance Laboratory of the American Gas Association, particularly in the writing of approval specifications. It will also investigate installation problems with a view to issuing information from time to time. The committee will be organized in three groups—the Northwest group being under the leadership of C. R. Miller of Portland, the Central group under H. M. Crawford of San Francisco, and the Southern group under F. M. Banks of Los Angeles. E. L. Hall of Portland will act as general chairman.

The second special committee has been asked to make a study of the duplication which is said to exist in the work of our Association and that of the national associations and the local electrical associations. D. J. Young of Tacoma, Washington, is deeply interested in this problem and has consented to act as chairman of the committee.

Let's Blow Our Own Horn!

DO YOU have gas in your town? Do you use it in your house? Do you use it whenever and wherever you need heat? Of course you do, for you are a gas man and can appreciate gas. But you have friends who are not gas men and who, while they use the gas, do not appreciate the work it saves them. To them it is just gas—common, every-day, smelly gas. As a matter of fact, they ought to worship it: "Oh, Clean Gas!", "Oh, labor-saving Gas!", "Oh, quick-results Gas!" Ask those who have to do without gas. They know. They want it, as witness the following:

The Las Vegas (Nevada) Review says editorially—"A Gas Company for Las Vegas! . . . . By December this city will have added to her resources one more modern convenience. . . . . Las Vegas welcomes her gas company as a distinct addition to the community."

The Tehachapi News: "Prospects for Tehachapi securing gas service within the near future seem more promising at this time."

The San Diego Union: "Plans for the construction of a gas plant to serve Oceanside were discussed at the meeting of the Oceanside Chamber of Commerce today."

The Fresno Bee: "Much interest is being manifested by householders and business men of Lemoore at the prospect of gas being made available. . . . . Lemoore is unique in that it is one of the few communities of its size in California that has never had gas and has to a large extent relied upon electricity as a substitute."

The Tracy Press: "If, after an investigation, it is found that gas plants in other communities the size of Tracy are being operated successfully, the Tracy Chamber of Commerce will launch a campaign for the installation of such a plant here."

And so it goes—they all want gas service. Other towns trying to modernize are Roseville, Paso Robles, Sanger, Sonora, Covalis, and the Imperial Valley cities.

Don't let anybody take gas service for granted. It is one of the biggest assets your city has.

WRINKLES

THERE has been some criticism of our overt act this year in discontinuing the Wrinkle Department as a part of our Convention program. It was done from necessity—we had too many other things. We want to keep the wrinkles going, however, and so offer what is really a better plan than to display them at the Convention and then bury them in the Proceedings. WESTERN GAS has offered to publish all Wrinkles submitted through the Secretary's office, thus giving them more publicity and making them more immediately available to others than in the past. Do you know what a Wrinkle is? It is any device, form or scheme which tends to make work easier, cheaper or more efficient whether in the plant, office or field. Write them up briefly and send them to the Secretary accompanied by any photographs, original drawings or forms that may help to illustrate them.

Another word about WESTERN GAS. It is our magazine so why not use it? Send in a word about your promotion, your trips, or whatever happens that will interest your friends. Do you remember those bulletin's from the Secretary's office advertising used equipment for sale and wanted? They sold a lot of stuff. WESTERN GAS will carry this now in a classified page if you will send it in and agree to pay some trival sum. Help wanted advertisements will be handled the same way and anybody who wants a job can get an ad put in free. It pays to advertise! Use these opportunities!

Why Work on Committees?

NOW that we are on the eve of another year's work, it behooves every Association member to meditate a bit on what it is all about. Such questions as "Why should I belong to the Association?" "Why should I work on a committee?" or "What do I get out of it?" no doubt frequently come to everyone and should be answered now. Bills for dues will be mailed out shortly and committees will be organized during October.

The answers to these questions will vary according to individual temperaments, but in general you belong to the Gas Association because you are a worker in the gas industry and don't want to overlook any bets. You should work on committees for the same reason, only more so, and finally you get out of it many times what you put in, bearing in mind, however, that even a million times zero is only zero.

PAYING OFF COMMITTEEMEN

There is no more pleasant glow possible to the human heart than the receipt of merited appreciation. Let us look briefly into the Association's files. Here is a letter from the Montreal Light, Heat and Power Consolidated. It says in part, "The report of your Safety Bureau is so good we want to use it in our company." Does this repay V. R. Hughes and R. R. Blackburn and the others who wrote this report for their labor? It helps a lot. Does it do C. R. Miller and his associates any good to know, and have others know, that their "Appliance Installation and Service Manual" has been sold in every state of the Union and has received compliments enough to turn the head of a

prima donna? We think it does. H. S. Christopher has written three papers for the Association on soil corrosion. As a result, he has become a national authority on this subject. F. L. Nagel took the little subject of credit and wrote a report which may revolutionize the credit methods of public utilities. At any rate Eastern gas companies have been telling one another about Nagel's report, for here is a letter from Providence, R. I., saying that they heard about it from a man in Newtown, Pa. W. D. Dickey worked hard on a report on meter installation and it has become a text book on the subject. We've heard about it from Minnesota, from Alabama, from Massachusetts, Texas and way points. R. V. Wilson was doing some work for his company which gave him an idea. He wrote a paper about it and read it at a regional meeting. It must have been a good idea for here is a letter from a big gas and electric company in New Jersey asking for enough copies to distribute to all employees. R. M. Conner was chairman of the committee which produced the "Appliance Testing Code." After two years this book is still a standard reference and has a steady sale. Mr. Conner is now Director of the National Testing Laboratory. What did he get out of it?

If these random examples do not prove to you that it pays to be a committeeman of the Pacific Coast Gas Association, the Association will ask you for nothing but your resignation.

NOT ENOUGH JOBS ..

Just one more word. We have so many members that there aren't enough committee jobs to go around each year and the men who get them are those who have proven themselves before and advertised themselves a bit. If you have an idea, if you want to work on a committee—advertise—push yourself—tell the boss—tell everybody—and if all else fails, write the Secretary about it. He may have some influence.

The Acorn Division of the Standard Gas Equipment Corporation is represented on the Pacific Coast by J. M. Merritt, 2157 Sacramento Street, Los Angeles, and by F. D. Barrett, 474 Everett Street, Portland. The Directory of Gas Appliance Manufacturers recently published by the Association should be corrected to this effect.

F. H. Ripley, Superintendent of the Wenatchee Gas Department of the Puget Sound Power and Light Company, is leaving Wenatchee to enter the Industrial Gas Engineering Department of the Milwaukee Gas Light Company, Milwaukee, Wis.

First Regional Meeting

THE Central Regional Meeting of the Association will take place in San Francisco on Thursday, November 18. Present plans indicate that it will be a one-day meeting, with sessions morning and afternoon, in the auditorium of the new building of the Pacific Gas and Electric Company.

The customary evening dinner will be replaced by a noon luncheon at a nearby hotel, and a rather unique program is being worked up for both sessions and the luncheon.

On Friday following the meeting it will be possible for visitors to arrange a trip to the new Marysville water gas plant of the Pacific Gas and Electric Company which was put into operation in September.

E. C. Cooley, formerly with the Potter Radiator Corporation, is now manager of the San Francisco District of the Aladdin Heating Corporation with offices at 4640 Geary Street, San Francisco. The company is featuring McLaughlin Furnaces.

Be It Resolved!

Following are the resolutions written into the Convention record at the Pasadena sessions. The Committee on Resolutions consisted of F. S. Wade, Chairman, E. S. Hoyt, and J. F. Pollard.

FOR BETTER ADVERTISING

WHEREAS: Large sums of money are being wastefully expended each year by gas companies and commercial houses in the purchase of advertising of little or no value, and

WHEREAS: The Pacific Coast Electrical Association and the Public Utilities Departmental of the Pacific Coast Advertising Clubs Association have taken action to curb this abuse, and

WHEREAS: The Advertising-Publicity Section of the Pacific Coast Electrical Association has extended an invitation to the advertising authorities in all the other utilities to join in a movement to purge advertising of its wasteful practices, therefore be it

RESOLVED: That the Pacific Coast Gas Association hereby places itself on record as discouraging the indiscriminate expenditure of money for unproven advertising ventures, and urges that the executives of member companies take a firm position in denial of support to the publishers of casual and one-time media, or of media which offer no adequate advertising return, and in denial of support to charities, associations, etc., through the channel of advertising; and further be it

RESOLVED: That the Advertising Bureau of the Commercial Section be requested to formulate a code of advertising practice which will embody the foregoing principles, in co-operation with the Advertising-Publicity Section of the Pacific Coast Electrical Association and the Public Utilities Departmental of the Pacific Coast Advertising Clubs Association, such code to be submitted to the Board of Directors for its approval and recommendations.

BLUE STAR PLAN ENDORSED

WHEREAS: The American Gas Association through its Gas Appliance Testing Laboratory has initiated a work which can be of inestimable value to the gas industry, and

WHEREAS: The success of the Laboratory and the so-called "Blue Star Plan," based upon its work, are entirely dependent upon the close co-operation of gas appliance manufacturers and gas companies, be it

RESOLVED: That the Pacific Coast Gas Association endorses the plans of the American Gas Association and urges its manufacturer member companies to submit their appliances for approval and its gas company members to take steps to initiate and further the "Blue Star Plan" in their respective territories.

APPLIANCE INSTALLATION

WHEREAS: The question of the proper design and installation of gas appliances is becoming more and more important to the future of the gas industry, and

WHEREAS: During the past two years this Association has had committees engaged in a study of two phases of the gas appliance situation —one involving an investigation of the quality of gas appliances being offered the public, and the other an investigation of the possible improvement of the character of gas appliance installations by means of municipal ordinances, and

WHEREAS: The progress being made by the Laboratory of the American Gas Association no longer warrants further pronouncements by this Association in regard to the quality of gas appliances, but does not offer aid in the solution of installation problems, be it

RESOLVED: That the Appliance Certification Committee and the Municipal Ordinance Committee be commended for their work, which has been of inestimable value to the gas industry, and be it further

RESOLVED: That the Association direct its officers to appoint a committee to continue the study of the gas appliance situation with special reference towards issuing information on installation methods, and that this committee be also empowered to fulfill such functions heretofore held by the Appliance Certification Committee as may be considered meet and proper under developing circumstances.

A RESEARCH FELLOWSHIP

WHEREAS: Both technical research and the development of men capable of conducting research are matters of importance to the gas industry, and

(Continued on Page 44)

EDITORIAL

In Favor of the Trade Association

SOME time ago the vice-president of a prominent New York bank appeared before a group of manufacturers assembled in an associational meeting. His remarks were in exposition of the trade association in its relation to business. The trade association is a powerful force for good in the industrial world, says this banker, for its efforts can fill the gaps left by individual ignorance and inefficiency, to which most business ills can be directly traced.

Some of the banker's remarks did not apply to gas utility associations; most of them did. But they did apply emphatically to associations of gas appliance merchants, or manufacturers, or distributors. These are the basic functions of the trade association, as the speaker saw them:

a. To replace ignorance in business with knowledge.
b. To eliminate needless waste in competition.
c. To stimulate intelligent, constructive competition.
d. To transmit to the public the benefits arising from these services.

And it is the individual member's "follow-up" that determines the measure of good he will derive from his membership, said the banker. Unless ideas acquired through associational activity are applied in the individual businesses of the membership there will be no gain.

Speaking strictly from the viewpoint of his occupation, the banker closed his address with the statement that membership in a trade association will soon figure strongly in a banker's judgment of a business man's credit rating. This follows because trade association membership is a measure of character, of the individual member's ability to "get along" with his fellows; it is a measure of foresight and desire to improve present methods; lastly, the association measures an industry's soundness, since it owes its existence to the fact that it works toward stability and efficiency.

The Printed Word

IT is to be hoped that new business departments of gas utilities make it a regular duty to go through the pages of publications which are influential in the field to which these departments appeal in the sale of gas. The list of these publications would include magazines of the household, of the factory, of the engineer and architect, and a wide number of other fields which are open to cultivation by the gas salesman.

An example very much in point is an article entitled "Gas as Furnace Fuel", appearing in the September issue of *House & Garden,* a journal of national circulation. This article is a non-technical description of the advantages of gas for the use in question, and it is this type of publicity on which the sales department can reap returns.

Gas is getting on the front page with increasing frequency, and not only in connection with suicides, either. Such agencies as the publicity department of the American Gas Association, the utility information committees which operate in a growing number of states, and the independent action of a few progressive gas utilities are putting gas and its uses before the Nation.

Gas companies should scan the local publicity situation carefully, and overlook no chances to implant their message where it will bring forth fruit in the form of increased sales. Some hints on effective publicity will appear in *Western Gas* for November in an article on the pertinent subject, "Getting the Co-operation of the Local Newspaper".

No Excuse for Laxity

APPEARING in this issue of *Western Gas* is a committee report on legislation and taxation, summarizing a year of investigation and observation of developments in this field which might affect Western gas utilities. The report indicates that the gas company's place in popular favor, at least as manifested in the absence of specific legislation directed against gas companies, is well established.

While this happy condition is cause for congratulation, it should not serve to make gas men less watchful. In California and Oregon measures looking to state ownership and operation of electric power utilities are under consideration. Gas utility co-operation, to decisively defeat these measures and others like them, is demanded by strong considerations of self interest, as well as by those of sound economics.

Announcing a "Wrinkle" Department

EXECUTIVE Secretary Clifford Johnstone of the Pacific Coast Gas Association has a word to say about "Wrinkles", on the Association page in this issue of *Western Gas.* Read this comment from Association headquarters, and then look for "Wrinkles" every month. The department will become as valuable, and only as valuable, as our readers make it.

How *one* Employees' Association Operates

By A. F. MORAIRTY

Sales Manager, Central Arizona Light & Power Company, Phoenix, Arizona

THE employees' organization of the Central Arizona Light & Power Company is conducted on the principle that the employees of the company, whether they be officials or not, are interested in the welfare of their company. In the daily routine there comes to many employees ideas of improvement in the present methods or ideas of new methods of conducting our business which they think will render better service to our customers. Quite often these ideas have to do with other departments than the one in which they work. The employees' association gives the employees an opportunity to express their thoughts along these lines, affords discussion of the subjects between members of the different departments and is a clearing house from which a better understanding of the work of the company is obtained.

FOUR CHIEF ACTIVITIES

The activities of the association are divided into four branches: education, new business, social intercourse, and efficiency or economy. The programs of the meeting, held monthly, are made up of talks or reports along the lines of the four major activities. Each meeting begins promptly at 7:30 a. m. with a roll call. After the papers or reports of each department, there is a lively discussion by all the employees which brings out new ideas. These discussions are also valuable in that reasons are given as to why certain procedures should or should not be followed. Employees take a great deal more interest in the conduct of their company's business and they feel that they have been given all the information possible about the company's activities. The idea is eliminated that they are simply employed to carry out orders from their chief without ever knowing the whys and wherefores.

EDUCATION

The educational committee arranges a talk upon some subject of interest for each meeting. These talks are well prepared and generally given by some one of the employees on subjects such as public relations, rate building, safety first, fifty years of improvement, etc. This committee also has charge of the correspondence school course given to the men.

A list of employees is read with the amount of "prospect money" each has earned during the month. Prospect cards are furnished to all employees so that in the general routine they can turn in the cards of any consumers who are interested in buying gas or electric appliances. These cards are then turned over to the salesmen and if they are able to close the sale, the employee turning in the card participates in the commission allowed for the sale. This method results in the distribution of a large amount of prospect money to the employee. It is also of interest to note that in the following up of these prospect cards a number of good salesmen have been developed for the sales department. Additional prizes are often awarded to the employee turning in the greatest number of prospect cards resulting in sales.

The social activities consist of the annual picnic, dances, smokers, and athletic team schedules. It is needless to say that this creates friendly relations among the different departments.

EFFICIENCY

Three prizes of $5.00 each are awarded to the men who submit the best suggestions for improvement of service or economy in operation. One of these prizes is awarded to the plant men, one to the outside men, and one to the office force, so that men in the various departments only compete with the men doing their class of work. The suggestion boxes are under lock and key, one being placed at the plant and one in the office. Quite often 50 or more suggestions are turned in in a month, covering every field of activity from the saving of pencils to large savings in plant operation. This feature, embodying the subjects for the improvement of service and economy of operation, constitutes one of the most valuable results of the association.

That part of the program in which is given the general manager's report of the activities and future plans of the company always creates a great deal of interest. The employee feels that he is not just a worker going ahead without any enlightment but on the contrary that he is a co-partner to whom is explained the plans and ideals of the company as his chief sees them.

ATTENDANCE

Probably the most remarkable feature of the association meetings is the attendance. A typical meeting held during the past summer on an evening which was very warm, was attended by almost one hundred per cent of the employees. Every member who answers "present" at roll call at the beginning of the meeting and who is present throughout the entire meeting receives $1.00. While this feature may be different than that employed by other associations, yet, it insures a full attendance and is proof conclusive that the company is interested in the employees' viewpoint of company affairs and is seeing that the employee himself has a means of improving his value to both himself and the company.

In general, to the association may be attributed the friendly relations among the employees, the harmony between the departments, and the pride every employee takes in the conduct of his company's affairs.

STREET IMPROVEMENT PROGRAM MAKES WORK FOR GAS COMPANY

An extensive street and road improvement program involving over $4,000,000 expenditure has been started by the City of Portland, Oregon, and Multnomah County, which includes the city. This program will include straightening and widening of a number of the most important arteries of traffic, paving of several of the county roads, and construction of additional approaches to the Willamette River bridges. The Portland Gas & Coke Company, which serves all of the territory affected by this work, is now engaged in making the necessary changes in its underground system on the streets and roads involved.

OIL AND GAS MEN OF WEST TEXAS ORGANIZE

The West Texas Oil & Gas Association has been organized by a group of independent producers and operators in the Texas Panhandle district, and R. G. Barnum, pioneer operator in the district, has been elected president

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COPIES OF *Western Gas* FOR MAY AND JUNE ARE WANTED

The Library of Congress wants to complete its back files of *Western Gas*. Unfortunately, the publishers are entirely out of May, 1926, and June, 1926 issues. If any readers have copies for these months which they will forward to *Western Gas'* offices the publishers will appreciate receiving them, and payment will be forwarded upon receipt.

GAS STRIKE AT ARVADA, WYO., SUFFICIENT TO SUPPLY TOWN

Natural gas was struck near Arvada, northeastern Wyoming, while drilling for water recently. Geologists now inspecting the region are expected to recommend a deep test for gas and oil. It is said that the gas flow encountered is sufficient in volume to supply the domestic needs of the town of Arvada.

Absorbent Oil Cooling

By E. R. Cox

California Gasoline Company

The discussion which follows was delivered by the author before the September 23 meeting of the California Natural Gasoline Association. It treats of only one phase of oil cooling, and is to be followed by papers on shell and tube coolers, and combinations.

THERE are two common methods of cooling oil in natural gas absorption plants. One is with tubular coolers in which the water is circulated through the tubes and the oil in counterflow through the shell space. Frequently, special devices, some patented, are used to increase the turbulence of the oil. The transfer rate is from 60 to 80 B.t.u. per square foot per degree per hour for clean tubes, and drops rapidly to about half these values with the accumulation of scale. The other method is to circulate the oil in a pipe coil located in a cooling tower or spray pond, or to drip water over a stand of pipes as is done in ammonia condensing. If the temperature of the water is measured, striking and leaving the coil, and the transfer rate calculated in the ordinary manner, this is considerably lower than in tubular coolers, varying from 10 to 30. The advantage lies in lower cost of surface, lower temperatures attained and less trouble from scaling.

COOLING PLANT TESTS

With these considerations in view, a plant was built to cool crude oil from a dehydrating plant. The data are shown in Test "C". Water, at the rate of 150 G.P.M., was first cooled from 75° to 64° in a Fluor Cooling Tower, 12′x12′x30′ high, then sprayed over the coil through 16 No. 15 N.Y. Cooling Tower Company spray nozzles, and thence pumped back over the tower. The coil consisted of 5760′ of two-inch standard pipe, arranged in four coils of 36 lengths, 40 feet long each. These were laid in two layers, staggered, 2′6″ from the floor. The coil was surrounded by a corrugated iron fence 26′x42′x13′6″ high, open 3′6″ at the bottom. Three feet outside of this was placed an apron 3′6″ high to catch the drift. Crude oil, 26° Be, at the rate of 4500 barrels per day was cooled from 161° to 91° F. As an experiment the cooling tower was cut out, and the water merely recirculated through the sprays. The temperature of the pond water rose to 82° but that of the oil only rose four degrees, namely from 91° to 95°. Believing that adequate cooling could be obtained by coil and spray pond alone, this was adopted as the standard for absorption plants.

The coils are made up as grids, each consisting of 18 one and one-fourth inch pipes, 20 feet long, welded into a six-inch header at each end. The headers are provided with nozzels on alternate sides, at each end, so that when bolted together the grids stand up at an angle of 60°, and are all in series. The spacing of the pipes, projected to the horizontal, is one and one-fourth inch centers throughout, so that no drops can fall between them, and each pipe receives cold water. At the same time, ample air lanes are left between grids for ventilation. The bottom of the grids is 2′6″ from the floor. They are enclosed on one end and one side only, by a fence 16′0″ high, open 6′0″ from the ground. The water is sprayed through 19 No. 10 N.Y. Cooling Tower nozzles and is circulated by one Worthington 7½″x8½″x6″ Duplex pump, running at 20 R.P.M. Two of these cooling ponds were built for sub-cooling oil at old plants where the regular cooling was inadequate. The results are given under Tests "B" and "C."

RATING OPEN COIL PERFORMANCE

Difficulty has always been encountered in rating the performance of open coils of this sort and comparing one with another, on account of not knowing the temperature of the water film upon the coil, and not being able to predict the condition for a given design. To obviate this difficulty, the following method has been devised and seems to give quite consistent results. It is based on assuming that the problem is not one of simple conduction (in which the temperature of the water films would need to be known) but a complex process of conduction and evaporation. Tests "B" and "C" indicate that the results are not consistent if analyzed from the standpoint of atmospheric temperature alone nor from that of wet bulb alone. but that the cooling is a function of both temperature and humidity. Assume that the atmospheric temperature is the controlling factor at the hot end of the coil and the wet bulb at the cold end, since if the coil were indefinitely extended this would be the limiting temperature to which the oil could be cooled. Calling the oil temperatures in and out T_1 and T_2, and dry bulb and wet bulb t_1 and t_2 respectively, $T_1{}^* = T_1 - t_1$ and $T_2 = T_2 - t_2$. If T_1 is not more than 1.5 times T_2, T (mean) $= \frac{1}{2}(T_1 + T_2)$. If the ratio is larger, T (mean) $= [T_1 - T_2]$ divided by $[\log T_1/T_2]$. $D = T_1 - T_2$ or the cooling range.

D/T (mean) was calculated for both arithmetical and logarithmic values of T (mean), the latter indicated by T (mean)′. They are 1.02 and 1.06 respectively for "B" circulating 255 G.P.M., and 1.06 and 1.11 for "C", circulating 192 G.P.M. of absorbent oil, 32.5° Be and 33.5° Be respectively. In each case hourly readings were taken and these averaged for the 24 hours. The results are shown in Tests "B" and "C".

D/T (mean) is evidently affected more by atmospheric conditions than by the velocity of the oil. The weather was fairly normal during Test "B" and there was considerable rain during Test "C". The fact that under a wide range of weather conditions the value of D/T (mean) remained so nearly constant, would indicate that D/T (mean) $= 1$ would be a safe basis for design.

In order to ascertain whether D/T (mean) is a straight line function of the length, another reading was taken, to determine the temperature at the middle of the coil. This showed 8° out of 13°, or 61.5 per cent of the cooling in the first half of the coil. If the straight line relation existed, D/T (mean) should be one-half the values shown, for half the coil length, or .51 and .53 respectively. The arithmetical means are taken because this allows the middle temperatures to be readily calculated. These are 75.3° and 72.1° which would be 60 per cent and 59 per cent cooling in the first half. This checks within one and one-half per cent or 0.33° with test—well within the experimental error—and confirms the straight line assumption. The formula for one and one-fourth inch pipe would then be $(L=600)$, D/T (mean) $= L/600$.

In order to ascertain the effect of diameter of tube, the known performance of other coils is used although dry

*As used in formulas which appear in this paper T represents the heat exchange symbol for logarithmic mean temperature difference, usually represented by "Theta".

bulb and wet bulb temperatures are not known for these tests. However, they were all made in the same district, Los Angeles County, within five miles of the ocean and under average weather conditions. Under such conditions, temperature and humidity are quite uniform and it is believed that no substantial error is involved in assuming approximately the conditions for test "B", that is, 64° dry bulb and 58° wet bulb.

If D/T (mean) = L/C_1, C_1 = L T (mean)/D. If D/T_1 = L over C_2d (to the nth power), C_2d (to the mth power), = C_1 or $C_2 = C_1/d$ (to the nth power).

C_1 was calculated from the above relation and plotted against the outside diameter of the pipe, upon logarithmic paper. Except test "A", which was for crude oil, and an arrangement which probably did not allow sufficient ventilation, the points lay on a straight line with an exponent n=1.5.

Dividing C_1 by d (to the 1.5 power), C_2 is found and the results are as shown in Table D.

This shows excellent agreement for absorbent oil and the formula for this type of cooling would be:

D/T (mean) = L/260.d (to the 1.5 power) or L = 260 d (to the 1.5 power) D/T (mean).

The size of pipe, or number of pipes in multiple, must be determined by pressure drop considerations.

Where the oil is to be cooled through the entire range required in absorption plants (as in D & E), two coils, located in separate ponds, are connected in series and the water circulated, independently over each. This gives colder water for the final cooling. The gasoline condensing coils are also divided between the two ponds, jacket water cooling coils are placed in the cold pond and gas intercoolers and aftercoolers, in the warm pond. The oil cooling coils consisted of five one and one-quarter-inch pipes, 600 feet long in each pond. The temperatures realized were 134° to 67° at 29 G.P.M. and 139° to 70° at 48 G.P.M.

In order to compare spray pond cooling with surface coolers and a tower, the case "B" is taken with the following assumptions:

Oil, 255 G.P.M.=108,000 pounds per hour. 85°—68°

Water, 167 G.P.M.=83,500 pounds per hour. 64°—75°

Cooling Tower to handle 15 G.P.M. per lineal foot and cool from 75° to 64° with wet bulb at 57°F and costing $100.00 per lineal foot.

Surface cooler to have a transfer value of 70 B.t.u. per square foot per degree per hour, and to cost $2.50 per square foot.

Heat to remove=108,000x17x.50= 918,000 B.t.u. 1 hour.

Surface required=918,000/70x6.55= 2000 square feet.

Tower cost=167x100/15=$1110.00

Coolers Cost=2000x2.50= 5000.00

Total	$6110.00
Spray Pond	1330.00
Cooling Coils	3450.00
Total	$4780.00

Assuming cost of pumps, piping, etc. offsets, the advantage of the spray pond is $1330.00. The principal advantage, however, lies in avoiding the expense and shut-downs involved in scaling the tubes of surface coolers.

There is another advantage in the smaller quantity of water required, 120 G.P.M. instead of 167. For 30 pounds pressure it requires four pounds of steam per hour, per gallon per minute, and the cost of the steam is $2.00 per year per pound per hour, or $8.00 per year, per gallon per minute, for fuel alone. In five years this would amount to (167-120)x8x5=$1880.00 in favor of the spray pond. If less water is circulated the cost of cooling surface mounts rapidly. To afford a basis of comparison, this has been estimated as follows, heating the water to 70°, 75°, or 80°.

Heating to	70°	75°	80°F	Spray Pond
Cost of Coolers	$ 3930	5000	7280	3450
Cost of Tower	$ 2040	1110	760	1330
Total 1st Cost	$ 5970	6110	8040	4780
Cost of Steam, 1 year	$ 2450	1330	910	960
Cost of Steam, 5 Years	$12250	6650	4550	4800
Total Cost, 5 Years	$18220	12760	12590	9580

The advantage lies with the spray pond both in first cost (20 per cent) and in total cost for one year (22.8 per cent), or five years (23.9 per cent), choosing the most favorable design for the tubular coolers.

TEST "B"

Date Mar.	Atm.	W.B.	Oil In	Oil Out	D	T_1	T_2	T(mean)	$\frac{D}{T(\text{mean})}$	T(mean)'	$\frac{D}{T(\text{mean})'}$	G.P.M
27	62	58	84	69	15	22	11	16.5	.91	15.87	.947	256
28	65	59	86	70	16	21	11	16.0	1.00	15.46	1.035	255
29	64	57	86	68	18	22	11	16.5	1.09	15.87	1.135	253
30	63	57	84	68	16	21	11	16.0	1.00	15.46	1.035	256
31	64	57	87	68	19	23	11	17.0	1.12	16.28	1.166	258
Mean	63.6	57.6	85.4	68.6					1.02		1.063	255

TEST "C"

Date Apr.	Atm.	W.B.	Oil In	Oil Out	D	T_1	T_2	T(mean)	$\frac{D}{T(\text{mean})}$	T(mean)'	$\frac{D}{T(\text{mean})'}$	G.P.M.
3	62	55	80	65	15	18	10	14.0	1.07	13.60	1.103	188
4	63	56	81	66	15	18	10	14.0	1.07	13.60	1.103	192
5	64	60	81	66	15	17	6	11.5	1.30	10.58	1.417	191
6	61	60	80	66	14	19	6	12.5	1.12	11.26	1.240	192
7	65	62	80	70	10	15	8	11.5	.87	11.12	.899	191
8	62	60	78	66	12	16	6	11.0	1.09	10.18	1.178	195
9	61	57	80	67	13	19	10	14.5	.90	15.56	.835	199
Mean	62.6°	59.6°	80.0°	66.6°					1.06		1.111	192

TABLE D

Test	Coil Dia.	Length	T_1	T_2	$\frac{D}{T}$ (mean)	C_1	C_2
A	2"	1440	163	95.	1.075	1340	365
B	1¼"	600	85.4	68.6	1.063	563	263
C	1¼"	600	80.0	66.6	1.111	540	252
D	2"	2000	137.	69.	2.07	965	263
E	2½"	2250	135.	72.	1.79	1260	259

SKIMMING PLANTS IN TEXAS TO BURN NATURAL GAS

Natural gas will be the fuel used in most of the cracking and skimming plants in Texas refining centers, before the end of this year. Construction of a number of large gas lines is making the change-over possible.

LARGEST EUROPEAN CHARCOAL PLANT HAS 13-TON CAPACITY

The largest plant in Europe for the recovery of gasoline from natural gas has just been put into operation in Roumania by the Carbo Union Co. It is operated by activated charcoal and has a capacity of 13 tons of the finished product daily. An experimental plant of the same type has recently been installed in connection with one of the gas plants at Midwest by the Urbain Corporation of New York City.

A $100 Contest *for* Selling Points

Won By
B. W. REYNOLDS
Sterling Furniture Co.
San Francisco, Calif.

WHAT are the most compelling selling points which can be brought to bear upon the gas range prospect?" asked the Gas Appliance Society of California in paving the way for one of its recent campaigns. To get the best answers to this question the Society wisely went directly to those who might be expected to know talking points—the gas range salesmen. A $100 prize contest was arranged in the Society's territory, gas range salesmen being urged to compete. The material published on this page consists of the twenty-five questions prepared by the Society, which every contestant had to answer, and the answers submitted by the winner, B. W. Reynolds of the Sterling Furniture Company, San Francisco. Mr. Reynold's paper, which was awarded a score of 95 per cent, was judged to be the most constructive of those entered, and to him went the $50 first prize money. J. R. Donovan received $25 as second prize, third prize of $15 went to J. D. Kent and the $10 fourth prize to S. R. Dows. A. Montagne, Ray Trowbridge, and Chas. S. Filtzer were given honorable mention.

HERE ARE THE ANSWERS WHICH WERE AWARDED WINNING MONEY

1. List in the order of their importance the following sales arguments for the modern gas range: Cleanliness, Quickness, Economy, Convenience, Beauty, Low first cost, Low installation cost.

Answer: Beauty, quickness, cleanliness, convenience, economy, low first cost, low installation cost. This sequence is, of course, a matter of opinion. The points which seem to be the most effective with the customer at hand are the ones which should be stressed.

2. How do you show your prospective customer that the quickness of gas results in economical operation?

Answer: (a) No fuel is wasted because the gas is not turned on until it is needed and likewise it is shut off as soon as the meal is prepared. One does not have to start a fire 30 minutes ahead of time to heat up the stove, nor will any fuel be left to waste away after the meal is cooked.

(b) Affords the housewife an opportunity to devote more time to business, pleasure, self-improvement, etc.

3. Compare the cost of cooking with gas and cooking with other fuels.

Answer: When all phases are considered, gas is the cheapest fuel for cooking.

(a) A family that would spend three dollars a month cooking with gas would probably spend six to seven per month for cooking electrically.

(b) The cost of gas and coal for cooking are about the same. But when time, convenience and cleanliness are considered, gas is much cheaper.

(c) Gas and oil compare very closely but increased fire hazard, cost of repairs, and inconvenience make oil less desirable.

4. Why does a gas burner have to be regulated?

Answer: So that the right amount of air is mixed with the gas to give an efficient flame. When a gas burner is in proper adjustment, one burns more air than gas.

5. How would you adjust the gas range burner?

Answer: Regulate the supply of gas passing through the orifice by turning the little nut just inside the valve and adjust the shutter on the mixing chamber so that the flame burns with a sharp blue cone. The flame should usually be about three-fourths of an inch long.

6. How do you explain that it is easy to keep utensils clean when cooking on a gas range?

Answer: When the burners are properly adjusted utensils will not blacken over a gas flame. The black often seen on kettles is a carbon deposit caused by an improperly adjusted burner, and consequently an inefficient flame.

7. Is there water in gas?

Answer: Not really water—but there is a considerable amount of hydrogen which unites with the oxygen in the air to form water vapor when gas burns. About five or six gallons of water vapor are formed in burning 1000 cubic feet of gas.

8. How do you account for moisture on the kitchen windows?

Answer: In the open top range some of this is due to water vapor forming during combustion, but most of it is caused by the vigorous boiling or cooking of food on the top of the stove. With a properly vented and properly designed closed top stove, the latter reason accounts for the moisture on windows.

9. Is there grease in gas?

Answer: No.

10. How do you account for deposits of grease on walls and ceilings?

Answer: Gas gives such a hot flame that food is cooked very fast. This causes a greasy vapor to rise to the walls and ceilings. This can be almost entirely eliminated by slightly lowering kitchen windows at top.

11. What arguments do you use to show how the new gas range gives the housewife "Kitchen Freedom"?

Answer: (a) By the use of the oven heat control she can have a whole meal cooking at one time and she does not even have to be present.

(b) It is easy to keep clean and does not cause additional work on account of ashes, soot, etc.

(c) On account of its quickness she has more time for other pursuits.

12. What is the function of an oven heat control?

Answer: To take the "guess" out of cooking by automatically maintaining the oven at any temperature the housewife desires.

13. How does it accomplish its purpose?

Answer: By a mechanism (consisting of one metal which expands or contracts with changes in temperature and another metal which does not) so used that it will allow the proper quantity of gas to burn, which will maintain any temperature in the oven which the housewife sets on an indicator. A chart is furnished with each range which tells the proper temperature and exactly how long any dish should be cooked.

14. Why is it necessary to have the oven heat control in perfect adjustment?

Answer: So that the temperature of the oven will correspond with the temperature set on the indicator. Unless this is true the proper result cannot be obtained.

15. What are the advantages of the closed top over the open top type of range?

Answer: (a) Products of combustion are carried off in the flue, eliminating the collecting of water vapor due to burning gas on windows, walls and ceilings.

(b) Food may be boiled in several vessels with only one or two burners going.

(c) Small vessels do not tip.

(d) Food may be kept warm toward the back of the top.

(e) Eliminates cleaning of burners on account of food boiling over.

(f) Gives a larger cooking surface.

16. What are the disadvantages of the closed top as compared with the open top?

Answer: (a) Many closed tops are not properly made from an engineering standpoint, resulting in an inefficient flame.

(b) It is slower than the open top.

(c) One used to the open top has to peek under the top, or raise the lid to see how high the flame is.

(d) The flame is usually less efficient on a closed top because:

1. The burner is farther away from the vessel.
2. It floats a little due to a lack of air around the burner.

17. How would you explain to a customer the proper method of taking care of the closed top on her range?

Answer: Wipe it off after each meal with a slightly oiled cloth.

18. What sales arguments are most effective in selling the closed top feature of a gas range?

Answer: (a) This feature eliminates moisture on walls and ceilings.

(b) It saves cleaning of burners.

(These are the most effective of those listed in No. 15).

19. When is the best time to clean the porcelain enamel of a range?

Answer: After it is cool.

20. What is the best method of cleaning a porcelain enamel range?

Answer: Use warm water and soap after the range is cool. Never use scouring soap and scratchy or gritty powders.

21. What is the advantage of having a gas range vented?

Answer: To carry off the products of combustion which are principally carbon dioxide and do not support life.

(Continued on Page 48)

Gas Well Represented *at* California State Fair

THE thousands of citizens of the State of California that thronged to the State Fair at Sacramento in September were accustomed to seeing at this annual exhibit, not only the prize Percheron stud, or the champion Jersey producer of butter fat, but manufactured devices of every description that add years to life, and joy to the years, in a manner at one time unheard of in the dark ages of agriculture.

Still the reaper and binder, the mower, the tractor and hundreds of other types of farm machinery hold the spotlight. But it is a spotlight shared with the automobile, the washing machine, the gas furnace and the kitchen range. Manufacturers have wisely decided that while the tiller of the broad acres is pondering and selecting, his co-partner—the keeper of the farm house—is casting a speculative eye on anything which might "make it easier to get the housework done."

So the holiday spirit that pervades Sacramento and its justly famous fairgrounds is reflected in increased sales on the part of local merchants who see fit to capitalize on the opportunity afforded here.

Many of the products familiar to the gas appliance industry were noted on a casual trip through the tents and buildings housing the fair. The "Occidental" held the center of the stage in an attractive booth maintained by Wilson Bros. Breuners showed the "Wedgewood," Weinstock-Lubin the "Spark" and Harold B. Harvie the "Reliable." There was also on display a new type of warm air heater, the "Johnson," manufactured in Sacramento. Three booths were maintained by the Pacific Gas and Electric Company, which were wholly or partially devoted to gas, for both domestic and industrial use.

In the industrial display booth of this company, a Mahoney auto washing plant, utilizing gas as a fuel for the boiler, occupied part of the space, and a demonstration of welding, using city gas and oxygen in the torch was in progress. The new Humphrey Rotisserie was also strongly featured.

Exhibitors reported record-breaking attendances practically every day of the season, and many prospects were listed for follow-up calls, in addition to a gratifying volume of actual sales made.

W. H. HERMES TAKES OVER BLACK AND PENN SALES CO.

The interests of George B. Black and Walter G. Penn in the Black and Penn Sales Company, gas appliance establishment of San Diego, Calif., have been bought by W. H. Hermes, manager of the company, and the business will be continued under the name of W. H. Hermes Gas Appliances.

TOWER SCRUBBER ORDERED FOR SAN DIEGO GAS COMPANY

A tower scrubber of 10,000,000 cu. ft. daily capacity is to be constructed for the San Diego Consolidated Gas and Electric Company. The scrubber is to be 12 feet in diameter and 60 feet high.

GAS CHEMICALS CORP. BUILDS PLANT IN PANHANDLE

Foundations have been laid for the natural gasoline plant being erected in the Panhandle Field for the Gas Chemicals Corporation of Denver, Colorado. The plant will be in operation by November 1.

Wrinkles

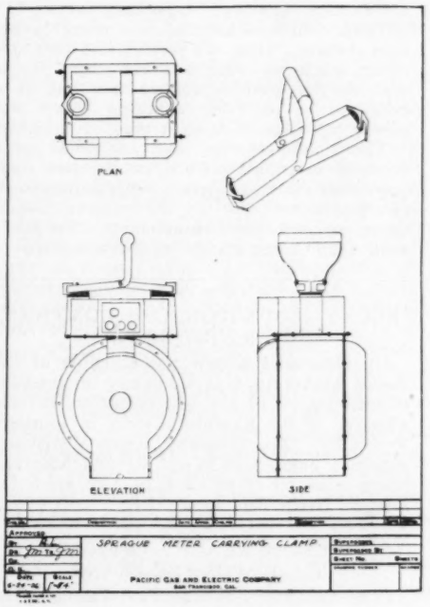
WESTERN GAS has arranged to publish "Wrinkles," which formerly made up a valuable section of the Proceedings of the Pacific Coast Gas Association. Contributions to this department should be addressed to Clifford Johnstone, Executive Secretary of the Association.

A Handle *for* Sprague Meters

By Roy J. Loofbourrow

"I am employed in the Gas Distribution Department, Pacific Gas and Electric Company, San Jose Section, and find this thing too good to keep quiet"—said the originator of this "Wrinkle," in submitting it for consideration.

THE accompanying sketch shows my idea of a useful special tool, "A Handle for Sprague Meters." The device is a time saver. It is a safe tool. Its cost is very little and it provides comfort for the worker.



The clamp is a time saver because with it an operator may handle two meeters at a time instead of one as at present. This item in the repair shop would be a large one. Meter men find it just right for placing meters on cars or removing them, and for carrying them to meter locations.

It is a safe tool because with it dropped meters are impossible. In the repair shop, especially in the painting operation, meters are very slippery. Any jolt or jar with a clamp in place only tightens the hold on the meter. Dropped meters mean large repair bills to both operator and meter.

Material used in clamp is as follows: 4½ inches of ½-inch W. I. pipe, one pound of trap iron, two 3/16-inch rivets (½-inch long.) and two 1/3 sections of a Sprague Meter ring. About half an hour is required to assemble a clamp. The strap iron is welded to W. I. pipe and brazed to C. I. ring sections. Critical angles are formed between grip and hinge and between hinge and ring sections. The two parts are hinged by the rivets so they move freely. This forms a very sturdy though light tool.

The jaws of the clamp fit loosely over threaded spuds of meter. When picked up the leverage developed in the tool draws ring sections into place, providing a convenient handle for a clumsy article.

FOURTH ANNUAL INDUSTRIAL FIRST AID CONTEST

Several gas companies and natural gasoline companies entered teams in the Fourth Annual California Industrial First Aid Contest, which was held in San Francisco on September 1. There were 27 competing teams, Pacific Gas & Electric Company having three, and the Southern California Gas Company, Pacific Gasoline Company, Los Angeles Gas & Electric Corporation, and Midway Gas Company having one team each, and there were a number of petroleum and mining operators represented. First prize when to the Standard Oil El Segundo team, second to Union Oil's "Oleum" team, third to one of the Empire Mine's two teams, and fourth to the Pacific Gas & Electric Company's San Raphael team. The prize in the resuscitation contest was awarded to the San Francisco team of the P. G. & E.

The above contest was held under the auspices of the Society of Safety Engineers of California and the Southern California Society of Safety Engineers, and was staged in conjunction with the International First Aid and Mine Contest conducted by the Bureau of Mines, Department of Commerce, September 2, 3, and 4, at San Francisco.

FALL HEATING CAMPAIGN NOW UNDER FULL HEAD

The Fall Heating Campaign of the Gas Appliance Society of California got under way during the week of September 20 to 27, when an intensive advertising campaign on gas-fired heating equipment was launched in the papers, in various strategic centers of the central and northern sections of the State.

In Oakland a direct-by-mail campaign to a mailing list of 75,000 names heralded the opening of the week, which precedes a three-month campaign of advertising and extra sales effort on this type of equipment.

In San Francisco a cooperative exhibit was maintained during the week in a prominent store located on Market Street, the main thoroughfare of the city.

The general direction of the entire campaign is in the hands of A. L. Crane of the Gas Appliance Society.

L. A. G. & E. TO OPEN NEW CAFETERIA

Employees of the Los Angeles Gas & Electric Corporation will soon have a brand new cafeteria available on the 12th floor of the company's Los Angeles office home.

SO. CAL. GAS CO. LAYS 131 MILES OF GAS MAIN IN SEVEN MONTHS

C. D. Bell, in an article summarizing distribution activities of the Southern California Gas Company, which appeared in the October issue of GAS NEWS, states that 131 miles of main have been added to the company's system in the past seven months. Twenty-one miles have been replaced. The company's distribution department, of which Mr. Bell is superintendent, maintains 200 trucks, ranging from light Fords to heavy five-ton trucks.

Typical of industrial displays in Fresno, Calif., P. G. & E. windows

Window Displays Tell Story *of* Gas *in* Industry

THE Fresno Division of the Pacific Gas & Electric Company sometime ago adopted the policy of reserving one show window in the company office for the exclusive use of industrial consumers.

All backgrounds, drapes and lighting effects are furnished by the company. The company will also trim the window for the consumer if he does not have a window trimmer of his own.

Two very fine windows have been put in recently, one by Dale Brothers Coffee Roasters and the other by the San Joaquin Bakery.

The coffee company's window represents a coffee plantation on one side and a neighborhood grocery store on the other, showing the various steps of production between the two. A large "Roasted With Gas" poster is prominently displayed.

The bakery window is made up of illuminated loaves of bread which light up intermittently. In the center of the window is placed a large picture of the bakery's plant, which is equipped with a 72-foot Baker-Perkins gas-fired travelling oven.

These windows have elicited much favorable comment from the public, and they are doing much to bring a great many people who do not seem to realize that gas as a fuel can be used for anything except domestic purposes to a right way of thinking.

The windows also tend to build up a friendly relationship between the gas company and the consumers. Several industrial consumers are now on the waiting list of those anxious to display their "Produced with Gas" commodities in the windows.

SUMMER COKE SALES ARE HIGH IN PORTLAND, OREGON

The Portland Gas & Coke Company reports the sale of 40,000 tons of briquets to date this year. This disposes of nearly all the surplus lampblack in storage from last winter's operations. The company's system of allowing customers to buy briquets during the summer at a lower price and on top of that deferring payment until the commencement of the heating season and extending the payments over the winter months makes these large sales in the summer months possible and avoids the necessity of having the large storage capacity and delivery fleet that would be necessary to handle the rush when the heating season started.

CONFERENCE OF COAST BUILDING OFFICIALS AT SAN JOSE

Building officials of Pacific Coast communities from Vancouver to San Diego met in session at San Jose, Calif., September 20-22, with the intent of drafting a building ordinance. Semi-annual conferences of the building officials are held on the Coast.

COURSE FOR INDUSTRIAL GAS SALESMEN GIVEN BY A.G.A.

September 27 to October 9 are the dates for the American Gas Association's second course for industrial gas salesmen. Sessions of the course, which covers the economic and sales aspects of the gas business rather than the technical, are held in New York City.

ROCKY MOUNTAIN GAS COMPANY HAS NEW RATE

On October 1 a new gas schedule of the Rocky Mountain Gas Company, understood to introduce a 10 per cent reduction, became effective in the Rawlins district in southern Wyoming. The company, which distributes gas in a number of Wyoming and Montana communities, has finished its line from the Oregon Basin field to Cody.

WOMEN REALTY OFFICERS VISIT SPOKANE PLANT

The Spokane Gas and Fuel Company recently held open house to the officers of the Women's Realty Extension. Details of manufacture were explained, and the point was emphasized that Washington mines supply all coal for gas generation in Spokane.

RATE INCREASE WILL NOT APPLY UNTIL DEC. 1

An increased tariff proposed by the Southern Oregon Gas Company, operating in Roseburg, Grant's Pass, and Medford, has been suspended until December 1.

CODY, WYO., BEING BROUGHT INTO GAS SYSTEM

Natural gas is being brought from the Oregon Basin district to Cody, Wyo., by the Rocky Mountain Gas Company. R. T. Ivie will be local manager for the company, and a branch office is nearly completed in Cody.

Laguna Beach *to* Have Gas System *in* Near Future

THE management of the Southern Counties Gas company has announced its plan of extending its gas mains to Laguna Beach, the artistic seashore city a few miles south of Balboa Beach, Orange County, Calif. Natural gas service will be introduced in Laguna Beach at an early date.

As soon as pipe is available the company will begin the extension of a six-inch transmission main from the terminus of its existing high pressure line at Newport Beach to Laguna Beach, and will install a distribution system there, together with the necessary services from the main to the property line, meters and regulators. A. F. Bridge, executive engineer of the corporation, states that the pipe and material for this extension have been ordered. For the Laguna Beach extension there will be required 46,000 ft. of six-inch transmission main, for the transmission line; 10,000 ft. of six-inch main, 25,000 ft. of three-inch main and 25,000 ft. of two-inch pipe for the distribution system. The estimated cost of this improvement is approximately $130,000.

The Southern Counties Gas company will install a gas office at Laguna Beach for the convenience of the new patrons there. The two-part rate schedule, recently filed with the California Railroad Commission, will be applicable to Laguna Beach consumers. This proposed two-part schedule is as follows:

Consumer charge, $1.25 per meter per month; commodity rate, 90c per standard 1000 cu. ft.

Laguna Beach will become a part of the Southern Counties Gas company's Orange County district and will be in charge of C. E. Rutledge, district manager of that territory. At the present time the Orange County district, the second largest on the Southern Counties system, numbers more than 21,000 consumers. It is believed that close to 900 meters will be added by extending its gas lines to Laguna Beach.

Marysville-Oroville Line

THE Marysville-to-Oroville high-pressure gas line of the Pacific Gas and Electric Company, one of the most interesting of the projects incidental to the construction and operation of the new coal gas set at Marysville, has recently been completed.

The line, which was constructed under the direction of engineer R. S. Fuller, is 34 miles long, and required the constant service of 134 men in its construction. Fifty-three carloads of six-inch and eight-inch pipe were used, the entire line being welded.

Due to the excessive heat in this part of the state during the summer time, it was necessary for the pipe line gangs to work from 6 a.m. until 2 p.m. so that they could avoid laboring in the heat of the afternoon sun.

This high temperature also gave rise to an interesting expedient whereby the pipe was cooled before it was covered in the ditch, to avoid a contraction during the coming winter months, that might result in numerous breaks.

As the welded sections of the line were lowered into the trench they were filled with water to bring them down to a normal temperature, and after the earth had been filled in, this water was used to flood the trench and settle the fill. Twenty-four thousand yards of dirt were moved.

The total cost of the line was approximately $280,000.

Standard Gasoline Co. Formed *in* Merger

WITH the merger of the natural gasoline operations of the Pacific Gasoline Company and the Standard Oil Company of California there has come into being a new company, identical in ownership with the Standard Oil Company, known as the Standard Gasoline Company. Eight producing plants formerly operated by the Standard Oil were made a part of what was formerly the southern division of the Pacific.

Earle Derby, who before his connection with the Standard Oil Company was manager of field operations for the Pacific Oil Company at Taft, Calif., is now in charge of active management of the Standard Gasoline Company's operations. R. E. Beckley continues as general superintendent.

The accounting department of the company which is in charge of G. F. Gephart, has been transferred to San Francisco, and the gas department of the southern division, formerly located at Santa Fe Springs, has moved into the Los Angeles general offices. This latter department is in charge of Floyd E. Huff.

A new department, for securing wet gas contracts has been formed, in charge of C. C. Beem, of the land and lease division of the Standard Oil. Pacific Gasoline Company's research department has been merged into that of the Standard Oil Company, in charge of R. A. Halloran.

C. E. Bevan continues as superintendent of the southern division of the company. G. C. McLaren is now assistant superintendent in charge of operations in Los Angeles Basin. H. V. Cowger remains assistant superintendent at Ventura. The southern division now has two engineers of operation, Earle Frey and N. B. Holbrook.

Following is a list of the plants which comprise the system of the Standard Gasoline Company, with new names given wherever names of plants have undergone change. Booster plants, abandoned and shut-down plants are not included.

Old Name	*New Name*
S. O. Baldwin	Montebello No. 1
P.G. Huntington Beach No. 1	Huntington Beach No. 1
P.G. Huntington Beach No. 2	Huntington Beach No. 2
P.G. Huntington Beach No. 3	Huntington Beach No. 3
S.O. Huntington Beach	Huntington Beach No. 4
S.O. Kraemer	Kraemer
P.G. Brea	Brea
P.G. Santa Fe No. 2	Santa Fe No. 2
P.G. Santa Fe No. 3	Santa Fe No. 3
S.O. Santa Gertrudes	Santa Fe No. 6
P.G. Long Beach No. 1	Long Beach No. 1
P.G. Long Beach No. 2	Long Beach No. 2
P.G. Long Beach No. 3	Long Beach No. 3
P.G. Athens	Athens
P.G. Dominguez	Dominguez
S.O. Marble Fee	Torrance No. 2
P.G. Inglewood No. 1	Inglewood No. 1
P.G. Inglewood No. 2	Inglewood No. 2
S.O.L.A. Investment No. 1	Inglewood No. 3
S.O. Murphy-Coyote No. 2	Murphy Coyote No. 2
S.O. Pico	Newhall
P.G. Ventura No. 1	Ventura No. 1
P.G. Ventura No. 2	Ventura No. 2
P.G. Ventura No. 3	Ventura No. 3
P.G. Ventura No. 4	Ventura No. 4

Plants operated by the Standard Gasoline Company in the Midway-Sunset, Elk Hills and Wheeler Ridge fields, northern California, retain their old names, and include the following:

Midway, Puritan Plant, Sixteen, Lakeview, Nine D, Kerto, Fellows, 29-G, 19-G, 33-G, 35-S, 35-E, 31-S, Hay Plant, Wheeler Ridge Plant.

UNION OIL COMPANY USES DRY GAS PRESSURE

The Union Oil Company is fast turning to the dry gas pressure to produce some of its old wells in the Richfield and Huntington Beach fields.

California Natural Gasoline Association

Items of interest to members and to the natural gasoline industry at large

OFFICERS

PAUL D. BARTON.....President
J. A. CAMPBELL.....Vice-President
J. S. WATSON.....Secretary, Box 237, Long Beach, Calif.

EXECUTIVE COMMITTEE MEMBERS

R. E. Beckley — I. B. Funk
Geo. L. Radcliffe — H. L. Eggleston
H. W. Parmalee — R. W. Garman

The three officers are also on the Executive Committee.

Meetings of the Executive Committee are held on the second and fourth Wednesdays of each month. The general membership meeting is held about the middle of eacn month, on mailed announcement from the Secretary.

Three papers were presented at the September 23 session, each of them being thoroughly discussed from the floor, under the leadership of members selected in advance of the meeting.

"Uses of Recording and Regulating Instruments" was the topic handled by M. O. Jensen, of the Jensen Instrument Company, discussion being lead by R. E. Beckley of the Standard Gasoline Company.

E. R. Cox of the California Gasoline Company gave a paper on "Absorbent Oil Cooling," printed elsewhere in this issue of *Western Gas*. Discussion was led by I. B. Funk.

L. V. Cassiday of the Lomita Gasoline Company presented a paper on "Fire Hazards in Natural Gasoline Plants." General discussion followed, under the direction of H. L. Eggleston, Pan American Petroleum Company.

Reporting at the September 23 meeting for the Safety and Fire Prevention Committee, chairman H. L. Eggleston announced that the committee would concentrate its efforts at present upon the subject of accidents, including both mechanical failures and bodily injuries. Statistics will be collected in this field, on the basis of which the committee will offer recommendations as to methods for prevention and remedy of both classes of accidents. The A. P. I. questionnaire method will probably be adopted by the committee. Fire prevention will be investigated as a separate project after the present accident-investigation program has been followed through.

Interest in what the Association is doing is "on the grow." Witness the attendance at the last three meetings. The July meeting drew 71; August saw the number rise to 106; September found 143 present. Membership blanks were distributed at the September meeting, and a new high mark in membership should result.

H. W. Parmalee, of the California Gasoline Company, has been named to succeed D. A. Cushman on the Executive Committee of the Association. Mr. Cushman, who is with the California Petroleum Corporation, has been transferred to Wyoming.

A large majority of those attending the September 23 meeting of the Association were on hand at Paulais in time to listen in on the Dempsey-Tunney fight returns, which were received over radio through the courtesy of Harold Nickle of the Shell Company, who provided the apparatus.

There has been some thought of changing meeting dates to the third Thursday of each month, instead of the third Wednesday. This move was informally sanctioned at the September 23 meeting of the membership. Definite announcement will be made to members by the Secretary.

WYOMING FIELD HAS LARGE GASSER —50,000,000-FT. FLOW

Another gasser has been brought in in the Wyoming fields. The Carter Oil Company's recent completion in the Billy Creek field has a gas flow estimated at 50,000,000 cubic feet.

SEAL BEACH GASOLINE PLANT PLANNED BY RICHFIELD

Richfield Oil Company, which holds a contract on gas from two of the Marland Oil Company's three leases at Seal Beach, Calif., has under contemplation the construction of a gasoline extraction plant, probably to be erected within 60 or 90 days.

SHELL PIPELINE FROM BREA TO SIGNAL HILL FINISHED

Shell Company has completed its 150,000-foot pipeline from Brea, Calif., to Signal Hill, by way of Santa Fe Springs, which carries gasoline from several of the company's absorption plants. The line varies in size from three-inch pipe to five-inch. A line already existing between Signal Hill and the Shell refinery at Watson serves to carry the gasoline to the latter point.

HIGH GASOLINE RECOVERY IN NEW TEXAS WELL

Thirty miles west of the nearest production, in the southwest part of Jones county, west central Texas, a well was brought in recently which gave an initial flow of 500,000 cu. ft. of gas yielding 5.3 gallons of gasoline to the thousand cubic feet. The well is owned by the Phillips Petroleum Company.

CABIN CREEK DISTRICT IS LARGEST GAS DOME

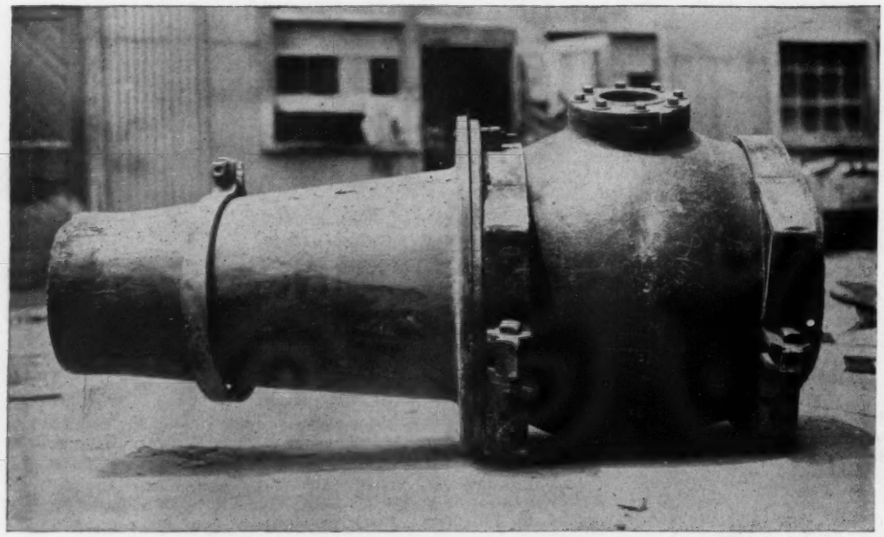
The U. S. Geological Survey reports the Cabin Creek district, Montana, to be the largest gas dome in the United States. These fields recently yielded a 9,000,000 cu. ft. gasser, owned by the Minnesota Power Company, which company supplies gas to Glendive.

LARGEST KEVIN-SUNBURST GASSER BROUGHT IN

With an open flow probably in excess of 50,000,000 cu. ft. a day, the largest gasser yet to be brought in in the Kevin-Sunburst field, Montana, was recently completed by the Sunburst Oil & Refining Company.

ROYALITE NO. 4 IN TURNER FIELD STILL MAKING RECORDS

Royalite No. 4, in the Turner Valley field, Alberta, is understood to be holding up to its production of 500 barrels of crude naptha and 17,000,000 cu. ft. of gas.



This gas burner—claimed as the largest single gas burner in the world—is on the lines of the Southern California Gas Company, installed at the kilns of the Riverside Portland Cement Company plant at Crestmore, Calif., near Riverside. The greatest diameter of the burner is 21 inches; it burns 600 cu. ft. of gas a minute; 5,000 to 6,000 cu. ft. of air are required each minute to produce a proper flame. Burners of the same general construction will be installed at the Monolith Cement Company plant, to which lines are now being laid.

Gas Replaces Oil *in* Cement Plant; Lay New Line

ABOUT the middle of September the Midway Gas Company began construction of a 35-mile gas line which will deliver natural gas to an industrial user of first importance. This is the high-pressure line from the Midway's main transmission line near Rose Station, at the foot of the Tejon Pass, to the Monolith Cement Company's plant four miles east of Tehachapi. The cost of the line will be in excess of $300,000.

The line is to consist of 33 miles of eight-inch pipe, and two miles of six-inch pipe, comprising a continuous welded system throughout its entire length.

The Monolith Cement Company's plant has in the past been operating on a fuel oil basis, and conversion to natural gas was undertaken after extensive research covering the comparative merits of the two fuels.

It is estimated that the Monolith plant will consume seven million cubic feet of gas each day, aggregating more than two and a half billion feet annually, in the production of 4000 barrels of cement each day.

In crossing the Tehachapi mountains between the south San Joaquin Valley and Tehachapi Valley the line will reach an elevation of 4,000 feet, but the company anticipates no unusual engineering difficulties in the project. It is expected that work will be complete some time in October.

What Is *the* Greatest Present Need *of the* Gas Industry?

WESTERN GAS is presenting each of the ten three-minute speeches delivered on this subject at the P. C. G. A. Convention. Following is the speech made

By B. H. PARKINSON

Portland Gas & Coke Company

THE greatest need of the gas industry today is better relations with those who are *not* our custamers. There is an absolute need for the co-ordination of all of the agencies directly or indirectly connected with the gas industry for the purpose of national publicity of gas and education in its uses. Agencies include the utilities, manufacturers, jobbers, retailers, schools and universities.

Who can question the success of the electrical industry? Yet why is that it, an industry hundreds of years older than its sister, must at this time strive merely to hold its ground?

WHERE IS ROMANCE OF GAS?

One hardly picks up a newspaper, magazine or periodical without finding a glowing account of the activities of the electrical industries; perhaps it is a colorful story of a hydro-electric development, a story painted so vividly of untold power produced in a simple way, from sparkling mountain streams that one fails to see the figure "one" following the dollar sign of the cost, but sees only the long row of ciphers. The gas industry is an equally romantic industry, but in the next column one does not read an equally glowing account of clouds of oil bubbling forth from Mother Earth or tons of black diamonds coming from the ground to be transformed into a mystic vapor, gas, to be delivered invisibly to one's home. No! Instead one reads "Man Killed by Gas" and if one is interested further one discovers that a man in Nova Scotia committed suicide by gas; an example of one of the unfortunate but well advertised uses of our commodity.

Young college men are interested, through publicity, in the occupations offered by the electrical industries and receive a diploma specifically certifying to their fitness for that industry's work. Ask a young man entering college if he would be interested in preparing himself for the gas industry and you would receive a blank and perplexed look as your answer. We need men of vision and high purpose to perpetuate the gas industry.

Building codes are educational in that they impress upon the user of the commodity in a matter of fact way the necessity of reasonable care. What a pitiful and meager comparison there is between the number of gas building codes and the number of electric building codes.

EDUCATION IS THE ANSWER

"If it is done with heat, you can do it better with gas" is an axiom. The gas industry is economically sound. Then why this wave of sales resistance? Why do a great many people believe that gas is too dangerous to use? Why is gas accused of being the origin of so many impossible evils? It is due to the lack of general education.

Thanks to those responsible, we have efficient manufacturing plants, distribution systems, accounting departments and have made long strides toward better relations with our customers. That which is needed today is better relations with those who are *not* our customers.

My friends, this publicity and educational work is not a local problem to be worked out by one utility here and an appliance dealer there, but is a problem affecting the entire industry and all its related agencies. It must be worked out on a national basis by organized effort of all the agencies of the industry.

NEW CORE OVEN SETS RECORDS IN GAS CONSUMPTION

A large core oven, eight feet wide, seven feet high and 26 feet long, installed at the Crawford and Doherty Foundry by the Portland Gas & Coke Company, shows remarkable fuel records when drying heavy sand cores weighing from 500 pounds to 4,000 pounds. The gas consumption was 250 feet per ton of core dried.

COAST VALLEYS PLANS BIG ISSUE OF STOCK

Coast Valleys Gas and Electric Company has applied to the California Railroad Commission for authority to issue and sell $1,000,000 of its series "B", seven per cent cumulative preferred stock, and to use the proceeds derived from the sale thereof to reimburse its treasury for capital expenditures and to finance construction expenditures for 1926 and 1927.

CONSUMERS' RESPONSIBILITY

The responsibility for the efficient use of gas lies primarily with the consumer. The American Gas Association is authority for the statement that of 42,020 homes visited in one large city within the past year, only 16,-029 had efficient gas appliances. The gas company is always ready to assist its customers in preventing waste of gas. When new equipment is purchased, practical and efficient appliances should be selected.

MERCO-NORDSTROM PUBLISHES CATALOGUE ON PLUG VALVES

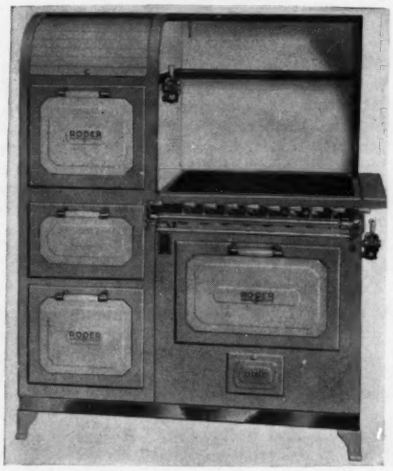
Merco-Nordstrom Valve Company's newly-prepared catalog No. 5, illustrates approximately a score of plug type valves adapted for use in the oil and gas fields. The booklet explains the manner in which hard grease can be inserted into plug valves under pressure to maintain a tight seal, regardless of the type of fluid or gas passing through the valve and regardless of the temperature. Copies may be obtained by writing to the manufacturers at 121 Second Street, San Francisco.

WITH THE MANUFACTURERS

New Appliances and Equipment

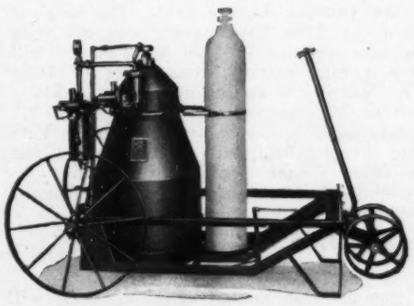
Gas Range

The Geo. D. Roper Corporation, Rockford, Ill., has put on the market a new type of gas range of the extra capacity design. This new range is built along the lines of the new No. 700 series Ropers, with flush colonial design, with invisible manifold feed pipe, invisible manifold supports, invisible nuts, bolts and hinges, etc. It has rust-proof porcelain enameled oven linings, ventilated oven, touch-a-button top lighter, electric light over cooking top, scientific cooking chart burned onto the oven door lining and is finished in a variety of styles and finishes.



Acetylene Generator

The Bastian-Blessing Company, Chicago, Ill., has brought out a portable, medium-pressure acetylene generator, recently given the approval of the Underwriters.



EXCELLENT PROGRESS MADE IN LEAKAGE ELIMINATION

Active work on leakage elimination during the past three years on the system of the Portland Gas & Coke Company has resulted in a reduction of the unaccounted-for gas to the lowest figure in 20 years. Completion of several large leakage elimination projects now under way and steady progress in a program of intensive examination of the mains and services block by block are expected to improve the leakage situation still more by the end of the year.

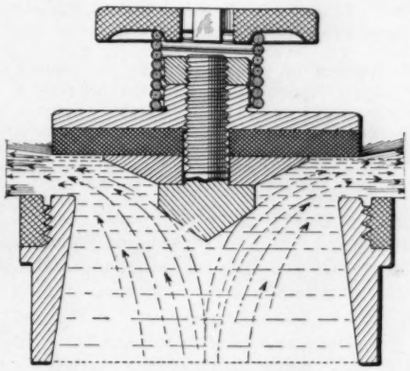


FIG. 1
ECTIONAL VIEW OF NEW WILLIAMS-BULLEN PUMP VALVE

Pump Valve

The Williams Gauge Company, Pittsburgh, Pa., are manufacturing and distributing a new pump valve, known as the Williams-Bullen Pump Valve. It is simple in construction, having but four parts. Web pieces have been eliminated from the valve. A Tobin bronze stud is used in its construction. The valve body is made of Government bronze. The disc is customarily made of "Wigaco," but will be made of any other material called for in particular pumping problems.

ANDALE MAKES NEW COAST CONNECTION

Arrangements have recently been completed whereby the DeLaval Pacific Company will represent the Andale Engineering Company of Lansdale and Philadelphia, Pa., on the Pacific Coast and in the Orient.

Through this exclusive arrangement the DeLaval Pacific Company will stock, sell, engineer and service the products of this manufacturer, which consist of duplex and simplex strainers for all liquids; duplex and simplex grease extractors; oil coolers; oil heaters; gas coolers; heat exchangers; after- and inter-coolers; evaporators and distillers.

The entire engineering service of the DeLaval organization will be available to customers who are interested in this new addition to the Industrial Department's activities.

GEO. E. BENSON, SO. COUNTIES EMPLOYEE, DIES IN SEPTEMBER

Geo. E. Benson, for several years commercial agent for the San Pedro District of the Southern Counties Gas Company, died suddenly at his home in San Pedro on Monday, Sept. 20th.

Mr. Benson was born in Denver, Colorado on Oct. 6, 1883. As a young man he became identified with the sales organization of the Denver Gas & Electric Company.

In 1922 he joined the forces of the Southern Counties Gas Company at Whittier, California, as an appliance salesman. A short time later he was transferred to San Pedro district under O. R. C. Grow, district manager of that division. Three years ago he was placed in charge of the sales and commercial organization of the company at San Pedro with the title of Commercial Agent.

BITUMINOUS COAL CONFERENCE DATES ARE NOV. 15-19

The conference on Bituminous Coal to be held at the Carnegie Institute of Technology in Pittsburgh has been definitely scheduled for November 15 to November 19, 1926, by an announcement from that institution. Listed for discussion are such questions as the manufacture of substitutes for gasoline from coal; the complete gasification of coal; high temperature and low temperature carbonization; by-products; smokeless fuel; pulverized coal; hydro-electric power versus steam power, etc.

$1,500,000 STOCK ISSUE FOR L. A. GAS & ELECTRIC

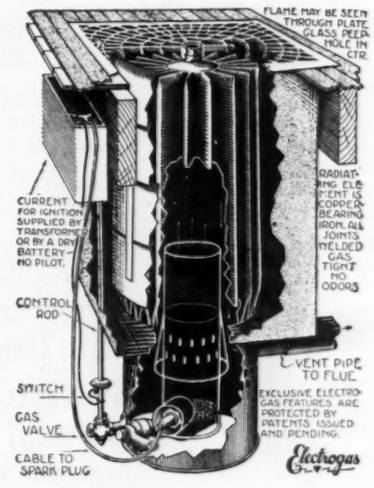
Los Angeles Gas and Electric Corporation has been authorized by the California Railroad Commission to issue and sell, at not less than par, on or before June 30, 1927, $1,500,000 of its common capital stock, and to use the proceeds to reimburse its treasury, and finance in part the cost of extensions and betterments.

DENVER BAKERY INSTALLS TRAVELING GAS OVEN

The Kilpatrick Purity Bakery in Denver has installed a traveling gas oven, through Surface Combustion Company and the Public Service Company of Colorado. Each tray requires 30 minutes to make the trip through the oven, traveling the length of the same four times each trip.

The bread enters the oven at a temperature of 3,000° F. and leaves at 4,500° F. insuring a gradually increasing temperature; and an even distribution of heat across the trays contributes to each loaf the same uniformity of baking.

One man, with this oven, is able to bake 1,500 loaves of bread an hour, 36,000 loaves a day.


FLAME MAY BE SEEN THROUGH PLATE GLASS PEEP HOLE IN CTR.
CURRENT FOR IGNITION SUPPLIED BY TRANSFORMER OR BY A DRY BATTERY—NO PILOT.
RADIATING ELEMENT IS COPPER-BEARING IRON. ALL JOINTS WELDED GAS TIGHT NO ODORS
CONTROL ROD
VENT PIPE TO FLUE
SWITCH
GAS VALVE
CABLE TO SPARK PLUG
EXCLUSIVE ELECTROGAS FEATURES ARE PROTECTED BY PATENTS ISSUED AND PENDING.
Electrogas

—a good floor furnace
—three sizes

ELECTROGAS FURNACE CO.
Rialto Bldg. San Francisco

NATURAL GAS GASOLINE OPERATIONS

Compiled by J. W. MASHAW

Department of Commerce, Bureau of Mines, Division of Mineral Resources and Statistics

ONE hundred and forty-six natural gas gasoline plants, with a daily indicated capacity of 1,173,869 thousand cubic feet, report a recovery of 33,056,968 gallons of natural gas gasoline from 23,889,116 thousand cubic feet of gas treated in August. This is a decrease of 84 barrels in daily average production. Twelve natural-gas gasoline plants with a daily capacity of 79,100 M.C.F. report as being shut down this month.

Utilization of natural-gas gasoline amounted to 721,062 barrels, a decrease under July of 41,577 barrels. Daily average utilization of 23 260 barrels was 2,130 barrels less than daily average production of 25,390 barrels.

Stocks of natural-gas gasoline at the end of August amounted to 204,258 barrels of which 42,888 barrels were reported by natural-gas gasoline plant operators and 241,370 barrels by refinery operators. This is an increase of 66,009 barrels over July stocks. This stock figure of 284,258 barrels is approximately twelve days supply at the current rate of consumption.

Production of gasoline during the month of August amounted to 4,203,431 barrels, a daily average of 135,595 barrels. This is an increase of 304,167 barrels or 7.8 per cent over the July output and 528,832 barrels or 14.39 per cent over the output of August, 1925.

Of the gasoline produced 4,974 barrels were reported as finished gasoline produced by natural gas gasoline plant operators. Stocks of gasoline show a decrease of 177,286 barrels during August and at the end of the month amounted to 9,554,687 barrels. This stock figure includes 576 barrels of finished gasoline reported by natural-gas gasoline plant operators.

CALIFORNIA NATURAL GAS GASOLINE PRODUCTION, DISTRIBUTION AND STOCKS

August, 1926

PRODUCTION

Type of Plant	*Gas Treated M Cu. Ft.*	*Natural Gas Gasoline Produced Gallons*	*Gasoline Recovery per MCF Gas Treated*
Oil Absorption	15,985,953	21,788,497	1.363 Gal.
Compressor	212,951	297,588	1.397 "
Combination Comp. and Oil Absorption	3,595,081	6,167,179	1.715 "
Combination Oil and Charcoal Absorption	3,048,316	4,638,420	1.522 "
Charcoal Absorption	1,046,815	158,013	.151 "
Drip	.....	7,271	.....
TOTALS	23,889,116	33,056,968	1.384 Gal.
Finished Gasoline produced at plants			4,974 Barrels

DISTRIBUTION			
Stock First of Month	.....		218,249 Bbl.
Production during month	.....		787,071 "
Quantity mixed with crude or unfinished oils	271,263 Bbl.		.....
Used in blending at Refineries	392,287 "		.....
Stocks end of month	284,258 "		.....
Used at Plants, Shortage and Evaporation losses	15,741 "		.....
Balance	41,771 "		.....
TOTALS	1,005,320 Bbl.		1,005,320 Bbl.

STOCKS			
Natural-gas gasoline held by Natural gas Gasoline Plant Operators	1,801,315 Gal.	or	42,888 Bbl.
Natural-gas gasoline held by Refiners	10,137,540 "	"	241,370 "
TOTALS	11,938,855 Gal.	or	284,258 Bbl.
Finished Gasoline (Motor Fuel) held by Natural-Gas Gasoline Plant Operators			576 Barrels

The Beacon Automatic Storage Water Heater

Has a Brass Heating Element With Six Times the Heat Conductivity of Iron

The Beacon is a heavy duty appliance—high grade materials throughout. The boiler is made of heavy gauge galvanized iron and all seams are both riveted and welded.

In addition to the heart of BRASS the Beacon has a rust-proof BRASS circulating pipe which keeps the water clean.

Beacon Water Heater Co.

776 So. San Pedro St. Los Angeles, California

AGITATE TO REMOVE DUTY ON GAS FROM CANADA

Gas transported into the United States from the Dominion of Canada now commands a duty of six cents a thousand cubic feet. R. B. Bennet, minister of the interior and finance of Canada was recently interviewed by a delegation from a border state, regarding the removal of the tax.

ANOTHER PLANT FOR STANDARD ENGINEERING COMPANY

On the lines of the Southern California Gas Company, three and a half miles west of Riverside, Calif., the Standard Engineering Co. is erecting an absorption plant. The same company has a plant at Newhall, Calif., operating on gas from the Midway Gas Company lines. The plant at Riverside will have an initial capacity of 7,500 gallons daily, the plans being to add another unit of the same capacity soon.

TWO COOPER UNITS ADDED TO BREA COMPRESSOR PLANT

A two-unit addition has been completed at the Brea, Calif., compressor station of the Midway Gas Company. The new units, which are Coopers, give the station a total horsepower of 1650, Gas is received at the Brea compressor station from the Brea Canyon field and is compressed for delivery to Los Angeles and the San Bernardino Valley.

CALIFORNIA GASOLINE COMPANY BUILDS NEW FIELD CAMP

A new general field headquarters camp is under construction for the California Gasoline Company at Signal Hill. This camp will cover about five acres. A feature of the camp will be a temperature-controlled laboratory constructed of concrete and hollow tile. Research work as well as control work will be carried on here. The construction of the entire plant is being handled by the J. B. Gill Corporation of Long Beach.

ENLARGE VENTURA AVENUE COMPRESSOR PLANT

As a step in its program to conserve natural gas, the Midway Gas Company is now erecting an addition to its compressor plant in the Ventura Avenue field. The original plant, of 2100 horse-power, coupled with the new addition of 2800 horse-power will give a total station horse-power of 4900. The Midway is expending a sum of $300,000 for this construction.

Additional gas, now available in the Ventura Avenue field, will be transmitted and delivered to the Southern California Gas Company for distribution in the Los Angeles metropolitan area.

FIFTEENTH SAFETY CONGRESS DUE IN OCTOBER

The fifteenth annual safety congress will be held at Detroit from October 25th to 30th, according to an announcement by W. H. Cameron, managing director of the National Safety Council with headquarters in Chicago.

TEST WELLS TO BE DRILLED FOR GAS NEAR SHELBY, MONTANA

Several test wells are to be drilled for gas near Shelby, Mon., by the Shelby Oil & Gas Company, which has distribution lines supplying Shelby with gas for domestic and industrial use. This company is also laying 32 miles of 8-inch and 10-inch line from the Mahoney dome field to the Producers and Refiners Corporation at Parco, where gas is to be used as fuel.

Pacific Gas ~~Radiator~~ Heating
Gas Heating Company Headquarters

The Name Is Changed to Remind You That Pacific Makes All Types of Gas Heating Appliances

Would you like to represent the largest gas heating appliance manufacturers on the Pacific Coast—to be able to go to **every** heating prospect in your territory and have exactly the right type of gas heating equipment that he needs—to sell a favorably known line with many obvious advantages and superiorities—to get most of the gas heating business in your territory at a substantial profit on each installation?

If this appeals to you—write to the Pacific Gas Heating Co., 1740 West Washington St., Los Angeles and ask for full details of the Pacific agency proposition.

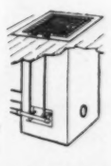
Gas-Steam Radiators

Dual Pipeless Furnaces

Wall and Fireplace Heaters

All Vented for Healthful Heat

Gas Radiators—Pressed Metal and Cast Iron


Pipeless Floor Furnaces

Unit Basement Furnace Systems

Manufacturers of Every Type of Gas Heating Appliance

Reynolds Gas Regulator Company

Beginning

Thirty-fifth Year

As

Exclusive Maunfacturers

Gas Regulators and Governors

We are the Oldest firm Manufacturing above products solely

Main Office and Factory *Anderson, Indiana*

Established 1892

Chas. C. Moore & Co. Engineers, Inc.

CONTRACTORS FOR COMPLETE PLANTS

High Grade Machinery

The Babcock & Wilcox water tube boilers
Corliss high speed and poppet valve engines
Babcock & Wilcox superheaters
Hamilton compressors
Green fuel economizers
Wheeler Condenser & Engineering Co. condensing machinery
Cochrane feed water heaters (open and closed)
Cochrane feed water softeners (hot and cold processes)
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Griscom-Russell Heaters, Evaporators, Distillers, Multi-Whirl Coolers
Moore automatic fuel oil regulators
Diamond soot blowers
Lagonda tube cleaners
Copes feed water regulators
Lagonda automatic boiler stop valves
Leslie reducing valves

And All Power Plant Auxiliaries

Address our nearest office for catalogs and complete information

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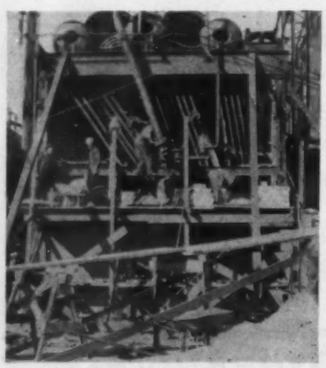


Brick work in progress—boiler installation L. A. Gas and Electric Co.

Any Place In The West

Established 1906

J. T. Thorpe & Son

Inc.

Fire Brick Contractors Specializing in

Gas generator, boiler, still and furnace brick, industrial furnaces, retorts, kilns, brick smokestacks.

Portland
632 Ry. Exch. Bldg.

Los Angeles
321 W. 3d St.

San Francisco
417 Market St.

Seattle
468 Stewart Bldg.

Liquid Gas

(Continued from Page 25)

It took three years of experimenting to produce these light tanks, and special Interstate Commerce Commission rulings were necessary to permit their shipment, carrying the high pressures required.

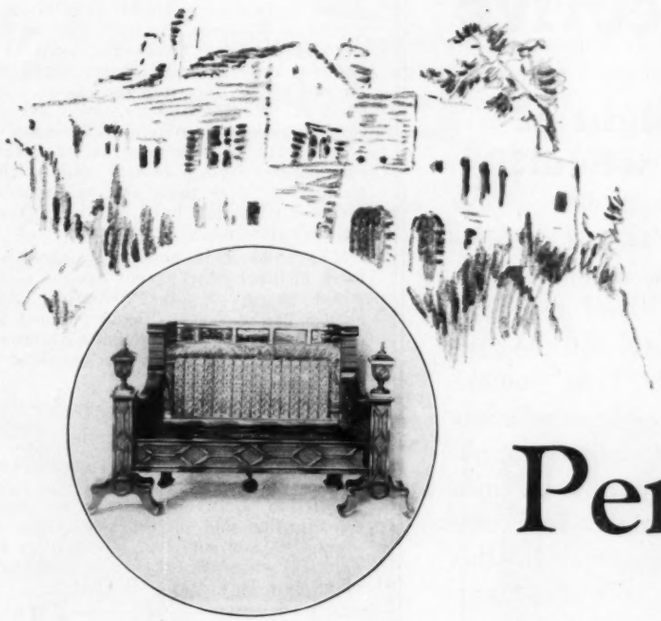
Without the special cabinet (which costs $35) which is built to house the unit, the cost of the outfit is $65 to $75, charges being proportionately higher for the units having larger tanks, used where hot water heating and house heating are required.

Fire underwriters permit the units to be stored immediately outside the kitchen, for the tanks are equipped with fuse plugs which melt at 165 degrees and permit the liquid to escape in case of over-heating.

One of the livest prospects for the "Rockgas" outfit is the city dweller who has left the metropolis. He knows the advantages of gas in the home, and it isn't to be wondered at that he looks interested when he is offered a fuel that yields 3000 B.t.u. to the thousand cubic feet in its gaseous state —when the only difference noticeable from regular gas service is that the new supply comes in a tank instead of through an iron pipe. If there is a discrepancy in the monthly bill, it is a slight one, making the comparison with electricity and other competitive fuels still all to the favor of gas.

With the liquid gas outfit on the premises and connected to the kitchen range—which, incidentally, is equipped with special orifices, closed to a greater degree than with ordinary gas, and with air adjustments changed to correspond—the goodwife puts the kettle on, turns the gas cock, lights the match over the burner, and what happens! Well, while she may not analyze the situation as closely as he does, here is what Mr. Kerr says happens,—still speaking in terms which *Western Gas'* representative might be expected to comprehend. When the turning of the gas cock releases the pressure upon the liquid in the storage tank, the "Rockgas," which has a low boiling point (26-30 degrees below zero, F.) begins to boil within the tank, turning to true gas, just as water turns to steam in the kettle. Thus the good wife lights her match to no less a gas than that in her city home—the difference being that the gas formed from the liquid is decidedly richer than any "natural" distributed by gas companies, even in the most favored vicinities. It is stressed by Mr. Kerr that while the layman is apt to conceive of some kind of atomization process taking place, as with the gasoline stove, such is not the case with liquid gas. It is a true gas when it passes from the container tank to the appliance. It flows from the appliance at a pressure of three ounces. The vapor pressure of "Rockgas" at 100 degrees F. does not exceed 20 to 30 pounds.

Buying the liquid from the gasoline company at prices in the neighborhood of gasoline prices, the Imperial Gas Company distributes it to its agents throughout Southern California. These agents, who as a rule are plumbers or other gas appliance dealers, are given a territory consisting of a half or a third of a county, and sell the specially equipped appliances and also sell the refilled tanks. These retail at about $6.50, and one of the small ones will run a family for cooking alone about six weeks—making the cost nearaly comparable to artificial gas service in small towns. Units for hot water and cooking combined, of 60-gallon capacity, are sold at $16.50 refilled, and will last with average use about two months. Tank capacity of the smaller units is equivalent



No. 160—"Mission"

Price
Prestige
Performance

Three definite things.

Sales may be made on price alone, or on prestige; or on performance. But the *greatest* sales come when *all three* qualities are combined in *one* product. That is

C. B. Babcock
Pacific Coast Manager
135 Bluxome Street
San Francisco

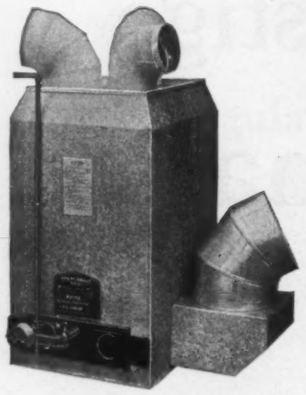
The HUMPHREY
Radiantfire
REGISTERED TRADE MARK

Manufactured by
General Gas Light
Company,
Kalamazoo, Mich.

MR. GAS CO. EXECUTIVE

Will you accept the weight of our shoulder to your wheel?

Doesn't your success, greater profits, less capital expense and greater dividends lie in getting more revenue from existing lines? And isn't the solution of this problem the general heating load? True you are greatly handicapped for whereas you can connect ordinary appliances you can hardly go into a building and install a real complete heating system. In this field aren't you at a disadvantage and at the mercy of contractors who are not wholeheartedly interested in gas heating? We think you are.



One Size of Payne Gas Furnace. More than 30,000 are working for Pacific Coast Gas Companies and giving satisfaction.

Your interests and ours are identical and we have a plan to help you if you will but inquire.

PAYNE FURNACE & SUPPLY CO. INC.

Main Office, 338 Foothill Road, Beverly Hills.
Branch, 2247 Grove St., Oakland, Calif.
Branch: 115 E. Union St., Pasadena, Calif.

Electric Weld Products---

The Wood Automatic Storage Gas Water Heater
The Standard Combination Storage Gas Water Heater
Electric Weld Range Boilers and Storage Tanks

Made and Guaranteed by

John Wood Manufacturing Co.

2437 ENTERPRISE STREET **LOS ANGELES, CALIF.**

to about 3000 cubic feet of artificial gas, said Mr. Kerr.

A wide variety of usage is possible with the liquid gas. It has been prepared for handling on yachts, in two and one-half gallon tanks equipped with handles. Several hundreds of stoves are operating on "Rockgas" in Southern California, even in communities where mains exist, which is explained by the fact that the mains may run only on alternate streets, with the in-between territory open to the "Rockgas" man.

It is even possible to serve small farming communities from a central station, where a number of large tanks can be connected in series, distribution lines leading to the consumers' premises.

The product is nationally advertised in farm media by the parent eastern company, which ships out of Pittsburgh. Another branch in the West is being planned for location in Northern Oklahoma. Materials for the western units are fabricated in Pittsburgh.

What is the gas man's reaction to the merchandising of liquid gas? Well, recognizing that the appeal made for the product is principally to the isolated farm home, it is likely that liquid gas is doing its more stable kin a favor—keeping the erstwhile city dweller sold on the advantages of the ideal fuel, and converting new users against the day when the gas main goes down in what now is virgin ground.

Quoting Babson *on* Future

IN spite of the phenomenal progress made heretofore by the gas companies in expanding their business, the full possibilities of development have barely been started, according to Roger W. Babson, in a recent release to his clients. Repudiating the idea that since the advent of electricity the use of gas has declined, he says that because of the development of the industrial and house heating fields, the future will be little short of spectacular.

REASONS FOR GROWTH

"The reason for this tremendous growth in the use of gas is not hard to understand," says Mr. Babson. "Gas heat, like electrical heat, is a clean, controllable and convenient heat. As compared with coal its expense eliminates the expense and nuisances of coal storage and handling and ash removal. At rates prevalent during the past it has been more expensive than coal but not as expensive as electricity. On an equivalent heat basis, gas is said to be about one-sixth as expensive as electricity. I understand that an efficient gas manufacturing system extracts up to 85 per cent of the possible heat in coal while in the generation of electricity not more than 15 per cent is made available.

INDUSTRIAL HEATING

"The advantages of gas for industrial heating purposes are very marked. It has been adapted to literally thousands of industrial processes and this number is growing constantly. Manufacturers find that in processes where gas has been substituted for coal, products of better quality are made, because the gas heat can be perfectly controlled. Furthermore it has been found that there is generally possible a marked increase in production. An industrial heating load is of especial value to gas companies in that it is an all-year round load."

HOUSE HEATING

"In view of the fact that gas companies will continue to enlarge their industrial

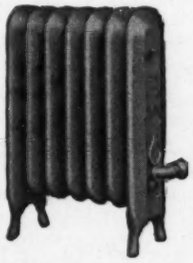
POTTER Heating

For many years POTTER Engineers have pioneered the way in the advancement of modern Gas Heating Systems. They have developed Gas Heating to such a degree of perfection that today, POTTER Products have become a standard of comparison wherever dependable, safe, economical and healthful gas heating is discussed.

OUR BEST ASSET

The tens of thousands of satisfied customers that our Organization has made through POTTER Gas Heating installations, is a JUST tribute to a satisfactory product—a gratification to conscientious effort.

THERE ARE MANY REASONS WHY IT IS BETTER TO INSTALL POTTER SYSTEMS

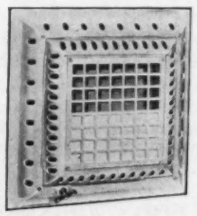


"POTTER" Vented Radiators

Only POTTER has these 7 POTTER Features

(Cast Iron and Steel-Made)

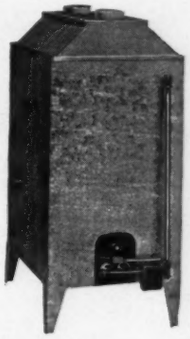
1. Condensation abolished. This does away with corrosion. Many years are added to the life of the Radiator.
2. Triple Circulation. The heat goes into the room, not up the flue.
3. Uniform warmth distribution. The air is never "cooked."
4. Quick heat. No other radiator heats so quickly as the light, efficient POTTER Steel-Made.
5. Aristocratic appearance. The POTTER Cast Iron Radiator is selected for the finest and largest homes.
6. Totally odorless always.
7. Not expensive.



"COLE" Floor and Wall Heaters

Made in heavy solid cast aluminum.

COLE is the only furnace manufactured that can be installed on either the first or second floor.



"MAGIC WAY" FURNACES

"MAGIC WAY" was the first, and has always been considered the leading Unit System of heating.

The principle of Unit Heating of modern buildings, brought to its present state of refinement through the study and efforts of this Organization, is based on the principle of an individual furnace or heater for each room or group of rooms to be heated.

This type of installation allows accurate temperature control in each room, regardless of the demand in other sections of the home.

POTTER quantity production now makes "MAGIC WAY" with electric controls, available to anyone who desires a gas furnace system.

The same features that make these well known POTTER-made appliances favorites with home builders and home owners, make them popular with churches, schools, theatres, auditoriums and factories.

The low cost of adequate heating by means of "MAGIC WAY" Vented Furnaces of either the Unit or Central Plant type, will be a revelation.

"MAGIC WAY" VALVES

By merely pressing a button, the temperature of any room may be regulated. This valve not only turns the heat on but it regulates the heat to suit your exact wants.

"MAGIC WAY" Floor Furnace

When the furnace type of heat is desired at low cost or when a basement is not available, use "Magic Way" Vented Floor Furnaces.

Potter Heating Includes:

"MAGIC WAY" UNIT FURNACES
"POTTER" GAS RADIATORS
"STEEL-MADE" GAS RADIATORS
"COLE" FLOOR AND WALL FURNACES

There Is a **POTTER System** for Every Need

POTTER RADIATOR CORPORATION

San Francisco—Oakland—Los Angeles—San Diego

FACTS
for Engineers

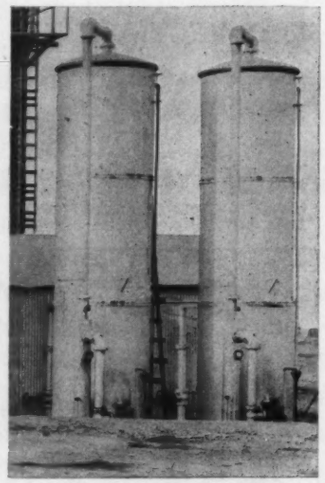
There are twice as many Campbell Oil-Froth Absorbers in operation in California than any other type.

More than one-third of the production of gasoline from natural gas in California is produced with Campbells.

Over 70% of all natural gasoline in the Long Beach Field is produced by Campbells and over 35% of all in Southern California.

One of the largest oil companies in California has 44 Campbells in operation. Two others 19 each. Many have six or more.

Write for Catalog.



A typical 2-tower Campbell installation

J. A. Campbell

Consulting—Designing—Construction
Natural Gas Engineer
P. O. Box 669
LONG BEACH, CALIF.

CAMPBELL
OIL FROTH
absorber

J. B. GILL CORPORATION

NATURAL GAS ENGINEERS

COMPRESSOR PLANT DESIGN AND CONSTRUCTION

P. O. BOX 669

LONG BEACH - - - CALIFORNIA

heating load," Mr. Babson goes on, "they may be expected to enter the field of house heating on a big scale wherever rate and load conditions make such enterprise worth while. It is only reasonable to anticipate further the large annual demands for new capital. These securities will probably find a good market, for gas companies are showing good earnings and they have the good will of the public. With an expansion in their market ahead of them, further economies possible through more efficient burning of fuels, and but little prospect of political enterprise, it is difficult to picture anything but a profitable future for well-managed well-located companies."

NET EARNINGS FOR AUGUST SHOW GOOD GAIN

Los Angeles Gas & Electric Corporation recorded net earnings for August, 1926, of $478,987.59, an increase of nine per cent over August, 1925. The balance for dividends and surplus was $96,182.43, which is an increase of more than 40 per cent over the same month in 1925.

Be It Resolved!

(Continued from Page 27)

WHEREAS: This Association has in the past given financial aid to the University of California for the equipment of a research laboratory, and

WHEREAS: Our Committee on Co-operation with Educational Institutions, after due deliberation, recommends that the Association establish a Research Fellowship at the University of California at an annual cost of One Thousand Dollars, be it

RESOLVED: That this association recommend that the Board of Directors make an appropriation of One Thousand Dollars to cover the cost of this Fellowship in 1927, and that provision be made in the budgets of the Association for continuing this Fellowship for a period of three years.

WOMEN'S SECTION

WHEREAS: Our President, Mr. F. J. Schafer, has delivered an address to the Association in which he recommends the initiation of a Women's Section in the Association, and

WHEREAS: This recommendation is deemed to be wise and of great potential value to the accomplishment of the aims of this Association, be it

RESOLVED: That the Association commend this recommendation to its officers for initiation to the fullest extent feasible.

CONVENTION WORKERS

WHEREAS: The program of the Thirty-third Annual Convention of this Association has been the work of many men, and the entertainment has been made possible by generous voluntary contributions from the three local gas companies and from a number of manufacturer members, be it

RESOLVED: That the Association express its appreciation to committeemen, to contributing companies, to Mr. W. M. Thompson, and the very efficient members of the Convention Committee, to the management and staff of the Vista del Arroya Hotel and to the officials of the City of Pasadena.

A new field of profits!

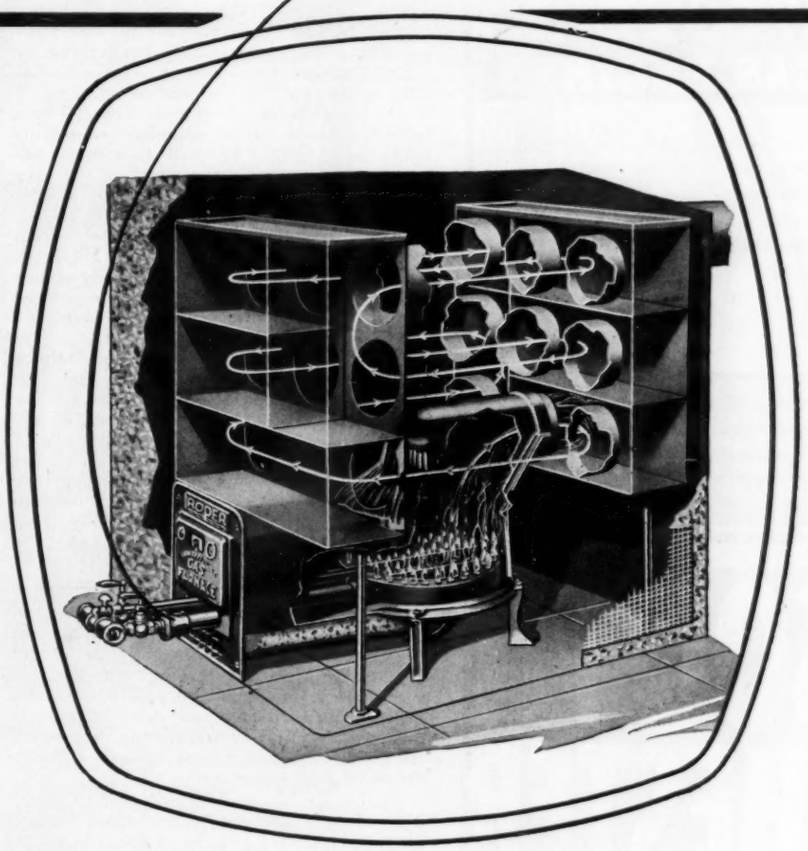
Automatic Control—
just press the button.

Experienced merchandisers see in the Roper Gas Furnace a new big opportunity to profit in two definite ways.

First, they will profit from the sale of these furnaces. The Roper is the original High Efficiency Gas Fired Warm Air Furnace—developed through the combined skill of twenty leading gas engineers. It offers automatic control—plus remarkable safety, cleanliness, efficiency and economy. It now has back of it the great manufacturing facilities and long successful merchandising experience of the Roper organization.

Second, they will profit from an increased consumption of gas. Every sale of a Roper Gas Furnace means an additional volume of gas used in the community—it is another step toward "the day when gas will be the standard fuel for home heating."

Start now to merchandise the Roper High Efficiency Gas Fired Warm Air Furnace—get your share of the new profits it has made possible. Send the coupon for full information.



A type of furnace for every need

Geo. D. Roper Corporation

Rockford, Ill.
Pacific Coast Branch
135 Bluxome St., San Francisco, Cal.

ROPER

TRADE MARK

HIGH EFFICIENCY WARM BABCOCK AIR GAS FIRED FURNACE

Coupon

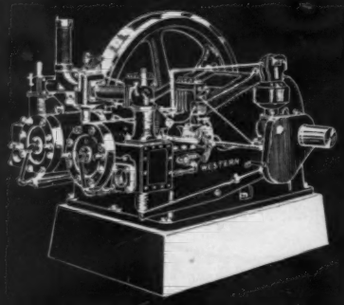
Geo. D. Roper Corporation, W. G. 10
Rockford, Ill.

Please send complete information about the Roper High Efficiency, Gas Fired, Warm Air Furnace.

Name .....

Address .....

City..... State.....



"WESTERN"
GAS ENGINES

Are sturdily built for continuous service, so simple in operation any one can run them. Efficient and economical, there's a size and type—single or multiple cylinder unit—for every purpose.

Write for "Western" catalog.

WESTERN MACHINERY COMPANY
Offices & Factory — 910 North Main St.
LOS ANGELES, CALIFORNIA
San Francisco Offices & Factory
18th and Alabama Streets

Refrigeration *by* Gas-Operated Apparatus

(Continued from Page 22)

makes and their desirable features. Rather, we believe it should be the policy of gas companies to actively push the sale of the refrigerators as soon as they are available, even though we are sure we will have difficulties with them. As the gas industry stands to benefit by the refrigeration load it should support the manufacturers of the machines. Without such support we can not expect improvements to be made. All those present remember the early days of the automobile with its continual breakdowns, and yet, see what the automobile is today!

EFFECT ON GAS SALE

Nothing has been said as yet about the possible gas consumption to be derived by the gas company from the gas refrigerator This applies only to the domestic type, which is the type being developed now. There have been some rather optimistic statements made, so it might be well to estimate as accurately as possible the effect on the load curve of an average gas company.

For sake of illustration we will take a company having 100,000 meters and selling 3,600,000,000 cubic feet annually (550 B.t.u. gas), this company to have a monthly winter peak of 350,000,000 cubic feet and a summer load of 250,000,000 cubic feet per month.

Surveys have shown that only about 30 per cent of the people now possess refrigerators and it is reasonable to suppose that half this umber could be sold automatic refrigerators. In other words, 15,000 of the 100,000 consumers of our gas company would buy gas refrigerators. Information and tests now available indicate that each user of a domestic refrigerator would use approximately 15,000 cubic feet annually for its operation. This consumption would vary from about 800 cubic feet per month during the winter to 1600 cubic feet per month during the summer. From this it would be evident that the gas compay would have its total sales increased 225,000,000 cubic feet. The winter peak would be raised 12,000,000 cubic feet and the summer load 24,000,000 cubic feet. From this it is evident that the refrigerator can not fill up the summer valley to offset the heating load. In fact, the heating load will exceed the refrigeration load from three to 20 times, depending upon the geographic location.

B.t.u. volume, cost of gas and location of gas companies will have a varying effect on the possible sale of gas for refrigeration. The effect of the B.t.u. value of the gas is obvious, as is also that of the rates. On the Pacific Coast, however, it is natural that locations with higher temperatures should have better prospects to develop a refrigerator load. The great valley of California from Bakersfield to Redding with temperatures as high as 115°F. is, of course, the first. Next comes Los Angeles and the Southern part of Califoria, followed by Portland and Seattle and with San Francisco and Oakland last.

The successful operation of the gas refrigerator rests entirely in the hands of the gas men and as soon as it is on the market every gas company should get back of it. Even though the usage of gas by the refrigerator itself may not be as great as many fondly hoped, still the use of refrigerators will encourage other gas uses in the home.

SOUTH CHESTER STEEL PIPE

Excels for Gas Service

The unusual care given to accuracy of diameter and welding qualities, makes Chester Pipe a favorite for gas lines.

SOUTH CHESTER TUBE CO.
Chester, Pa.

COMMISSION RECORDS SHOW UTILITY DEVELOPMENT

An index as to the development of public utilities in California during the period from March 23, 1912, the effective date of the Public Utilities Act, giving the Railroad Commission jurisdiction to pass upon public utility security issues, until June 30, 1926, is furnished by the fact that during that period the commission has passed upon $2,380,200,-921.74 of such securities

The total amount of securities passed upon during the fiscal year from July 1, 1925, to June 30, 1926, was $271,024,507.26, of which $262,463,149.26 of stocks, bonds, notes and other evidences of indebtedness were authorized. The commission denied permission to issue $274,960 and dismissed applications for $8,286,398 of such securities.

During the calendar year 1925 the 1791 public utilities operating in California under the jurisdiction of the Railroad Commission had a gross operating revenue of $955,230,-075.80, for their entire systems, as compared with $892,935.989.76 for the year ending December 31, 1924. The increase in operating revenue was $62,294,086.04, according to the annual report of the Department of Finance and Accounts of the Railroad Commission, just compiled.

Net operating revenues for gas companies in 1925 were $17.598 278, which figure for 1926 increased to $18,114,892.

SINCLAIR OIL HAS LARGE CASINGHEAD OPERATIONS

Partial explanation for recent increases in net earnings of the Sinclair Oil Corporation is due to expansion of its natural gasoline department, says the Inland Oil Index of Casper, Wyo. The company is now extracting more than 150,000 gallons daily.

SAFETY DEVICES INSTALLED BY PORTLAND COMPANY

The Portland Gas & Coke Company is equipping its Nordberg Cross Compound poppet valve compressors with safety overspeed stops. There is a tendency, especially when operating the machines at low capacities, for the poppet valves on the high pressure cylinders to stick, owing to the small amount of travel. When this occurs it is possible for high pressure steam to enter the low pressure cylinder and cause the machine to overspeed.

The safety device consists of a quick-closing valve placed on the main steam line to the compressor which is actuated by a dog mounted on a semi-circular spring mounted on the lay shaft. If the engine speed is excessive, centrifugal force causes the dog to engage with a trip and closes the valve. An additional safety feature is the provision of two stop stations, one located at the boiler and the other at the engineer's desk, by means of which the safety valve can be instantly closed on either of the compressors. In the event of an emergency such as the breakage of the transmission mains either the engineer or boiler firemen could stop the compressors.

L. A. EMPLOYEE ASSOCIATION TO HAVE DISABILITY FUND

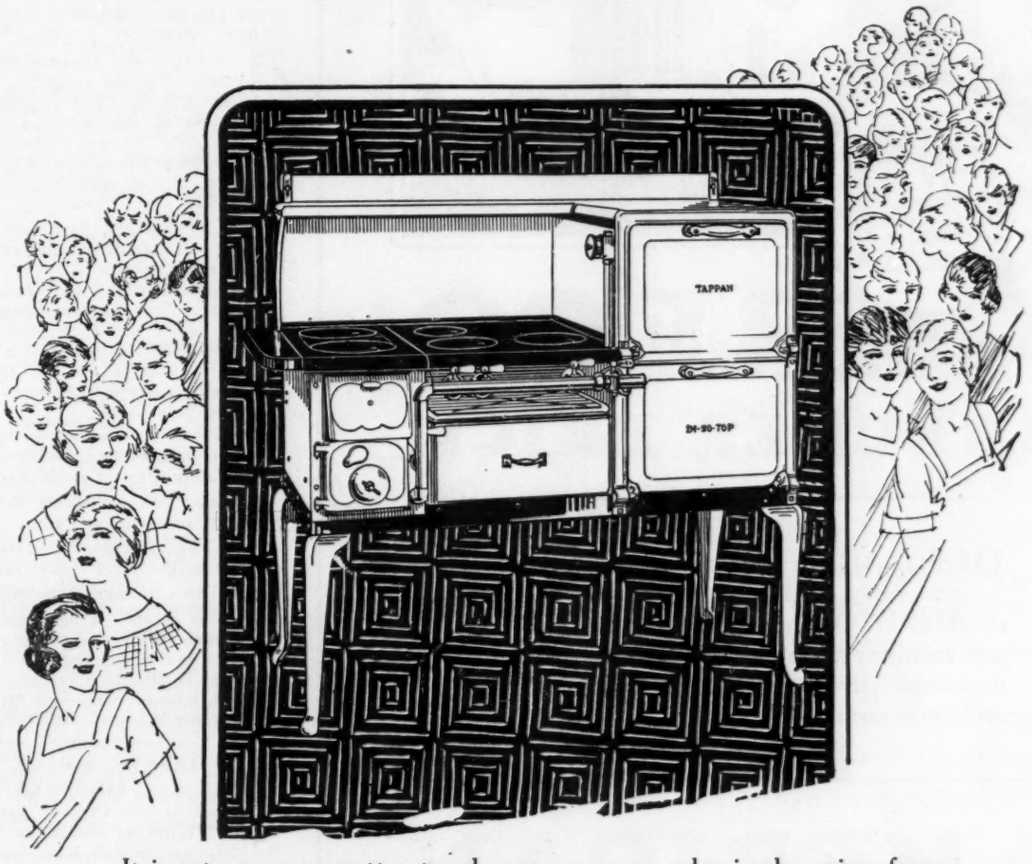
By-laws have been drawn up for the proposed disability fund of the Los Angeles Gas and Electric Corporation's Employee Association, and have been submitted to the membership for ratification.

OFFICE AND LABORATORY ARE BUILDIG AT STOCKTON

A one-story brick building and laboratory is now under construction at the Sacramento plant of the P. G. & E.

Pleasing the most critical judge—

THE WOMAN WHO BUYS



It isnot an easy matter to please a woman who is shopping for a new gas range . . . . The range she buys must be beautiful, but it must be more than that. It must be a good value . . . . but more even than that . . . . It must offer her the most saving in work, in anxiety over her cooking, and it must offer a saving in fuel bills. The**TAPPAN In-So-Top** does all of these things superlatively well, because its special features are in a class by themselves. The famous insulated oven keeps the heat out of the kitchen, makes kitchen work cool and pleasant, and saves half the gas. The TAPPAN oil-tempered, satin finished solid top will not discolor and is easy to keep clean. The TAPPAN rounded corners add grace and artistry to a beautiful range. And the TAPPAN oven heat control is an indispensable selling feature.

Sell the range that lessens competition in this keen field—write now for information regarding the TAPPAN agency.

TAPPAN STOVE CO.

H. R. BASFORD CO.
665 Howard Street, San Francisco
Northern California Representatives

H. R. MAYER
1001 E. First Street, Los Angeles
Southern California Representative

R. B. WHEELER
665 Howard Street, San Francisco
Pacific Northwest Representative

TAPPAN has been making quality ranges since 1881

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CHECKER BRICK

POPULARITY through merit! That is the story of the rapidly increasing use of AMRECO Checker Brick. If you are not familiar with this proven merit, your thorough investigation is invited. We welcome comparative tests.

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PHILADELPHIA STEEL & IRON COMPANY,
PHILADELPHIA, PENNSYLVANIA
FLANGES MFG'D TO SPECIFICATIONS

A $100 Contest

(Continued from Page 32)

22. What advantage has the oven with free air circulation over the fireless cooker type of oven?

Answer: (a) Foods brown better and have a better flavor.

(b) There is less shrinkage.

(c) Foods cooked in free air circulating ovens are more healthful than those cooked in dead, stale air.

23. What is the average cost of installation of a gas range?

Answer: Our price includes installation; however, we allow a customer $2.50 off the price if she wishes to install the range herself. If a plumber is hired to do the work, the average cost of installation is about $5.00.

24. Compare the first cost of a modern gas range with modern ranges using other fuels.

Answer: Gas and coal ranges cost about the same, while electric ranges are a little higher. Also, the average cost of installation of an electric range is about $60.00 as compared with $5.00 for the gas range. This, so far as the customer is concerned, is a first cost.

25. What are the advantages to a store of following up each gas range sale immediately after it is installed?

Answer: (a) By seeing that the stove is properly adjusted, and that

(b) The purchaser understands how to operate it, the store is assured that

(c) The customer is entirely satisfied.

A stove is only a mechanical device, but if properly sold it is the greatest business-getter in the world, because a satisfied stove customer is usually a talkative customer and a good booster who will gladly give you some real prospects.

UTAH SAFETY COMMITTEE READY TO SERVE

Service of the Central Safety Committee of the Utah Gas and Coke Company is at the disposal of Salt Lake City residents 24 hours a day, according to Geo. R. Horning, general manager of the company. The safety committee is of recent organization, and is proving a decided asset.

GOOD TEMPERATURE REGULATION SECURED IN PAINT-DRYER

That temperature regulation can be accomplished with a high degree of perfection when producing heat with gas is demonstrated by the operation of a paint-drying oven installed at the Columbia Tent & Awning Company, Portland, Oregon. This oven was designed and manufactured by the Portland Gas & Coke Company and relies on the principle of circulating air mixed with the products of combustion produced by a gas burner and admitting only sufficient fresh air to maintain combustion at the burner. Since there are 60 air changes taking place in the oven per hour the temperature can be varied or maintained with great ease by means of a Robertshaw temperature regulator.

BIG GAIN REGISTERED IN SAN DIEGO COMPANY CONSUMERS

San Diego Consolidated Gas & Electric Company has passed the 100,000-mark in its total of gas and electric consumers. During the first seven months of 1926 there were 2141 gas consumers added to the system of the company.

MEMBERS:

Beldin Co. Inc.
117 N. Maryland Ave., Glendale

Arthur Betz Gas Heating Works
789 S. Broadway Ave., Pasadena

A. J. Braasch Heating Co.
1041 N. Orange Dr., Los Angeles

Co-Operative Sheet Metal Works
127 N. Glendale Ave., Glendale

Crown City Heating & Ventilating Co.
1107 E. Colorado, Pasadena

Foss Heating & Sheet Metal Works
34 E. Holly St., Pasadena

Louis H. Freymouth, Jr.
311 E. Pico St., Los Angeles

National Plumbing and Heating Co.
1344 Fifth St. Santa Monica

E. P. Nittinger
1335 Third St., Santa Monica

Ohrmund Bros.
901 E. Colorado, Pasadena

Pacific Gas Radiator Co.,
1740 W. Washington Los Angeles

Pasadena Sheet Metal Works
57 W. Union St., Pasadena

Payne Furnace & Supply Co.
115 E. Union, Pasadena

Payne Furnace & Supply Co.
334 Foothill Rd., Beverly Hills

Phillips Heating, Ventilating & Mfg. Co.
1710 W. Washington, Los Angeles

Potter Radiator Corp.
3517 W. Washington, Los Angeles

Reliable Sheet Metal Works
350 S. Raymond, Pasadena

L. J. Rose
1012 Montana Ave., Santa Monica

Scott Heating and Mfg. Co.
1135 N. Milton Ave., Los Angeles

J. B. Smith Heating Co.,
5426 Santa Monica Blvd., Los Angeles

Superior Fan & Furnace Co.
1827 San Fernando Rd. Los Angeles

W. C. Taylor
313 S. Fair Oaks, Pasadena

30° to 70°

IF EVERY consumer on your lines could be guaranteed that his Gas Furnace would heat his home from 30 to 70 degrees, your complaints and troubles would be lessened. Your complaining consumers would become boosters for GAS as the ideal house heating fuel. Every Furnace installation made by members of this organization guarantees exactly this performance.

The members of this organization have pledged themselves to abide by the Standard Heating Code, which insures a unit properly designed for the above heating requirements, properly installed and adjusted.

Insist that every Furnace installation on your lines be backed by the *guarantee of this organization.*

The Gas Furnace Association of Southern California

635 Chamber of Commerce Bldg., Los Angeles

Write for copy of Standard Code for Gas Furnace Installation. It contains valuable information for gas company executives and employes, architects and contractors.

OIL METERS

The EMPIRE

Positive displacement, oscillating piston design.

Different from every other type of meter.

Unsurpassed in over forty years for accuracy, durability, and low cost of upkeep.

Used with highest satisfaction by

Gas Companies

in every section of the country.

Made in all sizes, 5/8 in. to 6 in., inclusive.

EMPIRE Oscillating Piston Oil Meters are fully described and illustrated in Circular 110-W. Send postal for your copy.

National Meter Company

299 Broadway, New York

Chicago Boston Atlanta
San Francisco Cincinnati
Los Angeles

Legislation *and* Taxation

(Continued from Page 23)

tors combined with the need to provide service at a cost sufficiently reasonable to build up the volume of its use and meet the competition of substitutes make amortization virtually impossible. Infrequent turnover and virtual lack of opportunity for amortization are not conducive to naturally competitive conditions. The service, unlike that of of other industries, cannot reach markets beyond the physical and geographical limitations of its service. The property of a public utility becomes an inseparable part of the land to which it is attached. It cannot be readily converted to other uses. Most of it cannot be taken up and moved elsewhere. Thus once abandoned it has little other than a salvage value and much of its property no value whatsoever. Unlike the property of other industries it is not susceptible of conversion to other uses nor can it be moved to more favorable market locations.

THE INDETERMINATE PERMIT

The franchise of today does not have the significance it had a quarter of a century and more ago, both in the public's estimate of its value and in its advantages to the public utility industry. At the inception of public utility enterprise and for a considerable time subsequent the public demanded and imposed certain privileges and exactions, such as concessions in the way of free service to the municipality, compensation in the form of special taxes, maximum rates for service, etc. These demands have become inconsistent with present day practices in providing under state regulation for reasonable and non-discriminatory rates. Special privileges and exactions concluded at times after indefensible practices on the part of both parties to the grant have become and are becoming passé under the enlightened ethics of public administration and public utility management and strict accountability under governmental control.

Under regulation by the state of the standards of service and charges for it, the regulatory provisions of franchises are no longer effective except as to the manner in which streets and highways may be occupied so as not to interfere with the safe and free movement of traffic, and in the levying of special taxes. Municipalities under their police powers may at all times control the use that may be made of their streets and highways by any class of occupants. Special taxes are becoming recognized as discriminatory because paid by the user in the rate charged for the service. There can be no economic justification for giving a value to a franchise for purposes of taxation and denying any value for purposes of capitalization or in fixing the rate base. All powers of regulation exercisable under franchises are now much more effectively exercised in the public's interest under general powers of regulation vested in state commissions. Changed conditions and the present day manner in which our public utilities are operated justifies a change in public policy applicable to franchises. Such a change has taken place in a few of our states by the enactment of legislation to provide for the indeterminate permit—the grant of the right to occupy streets and highways without a specific term, but so long as the utility conforms to lawful regulations for the conduct of its business or until the state or any one of its subdivisions shall have acquired ownership. The service of a public utility corporation almost without exception now extends to not one but many communities. Hence operation under uniform permits provided for by state statutes with only such control being exercised by minor subdivisions of state government as may be proper to conform to local conditions in assuring the safe and free movement of traffic on streets and highways would so stabilize the financial structure of the corporation as to make it possible to more readily and economically obtain the necessary capital for the improvement and extension of service.

HANDICAPS TO FINANCING

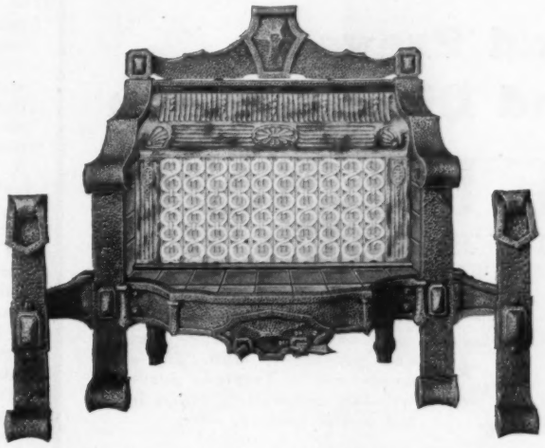
Where a corporation serves more than a single community the variable terms of franchises among a number of communities complicate the problems of finance. The franchise of fixed term leaves uncertain the usefulness of the property upon its expiration. Theoretically the only assurance the investor has of the return of his principal is by amortization of the investment during the term of the franchise.

Practically this cannot be done except at prohibitive rates and has been nowhere attempted, nor do regulatory authorities countenance provision for it in the rates fixed. It would be impossible to provide variable rates among communities interconnected and dependent upon property common to all such communities so as to amortize the investment in property upon the expiration of the variable terms of franchises. Rates must be maintained that can meet the competition of substitutes. Furthermore, if the theory of amortization were to be applied the objective of management would be seriously obstructed in attempting to build up a volume of business that would justify a constant reduction in rates.

It is impossible to obtain money from investors for bonds or similar obligations which mature after the termination of the franchise. No investor will purchase bonds or like securities secured by property which cannot be removed and which is liable to loss or confiscation prior to the maturity of such securities. Consequently resort must be made to short term financing at a higher cost of money than otherwise would be the case with increased rates for service to meet the added expense in fixed charges. Common sense and good economics demand that this unnecessary burden upon the cost of serving the public be eliminated by assuring as does the indeterminate permit, that the investor in utility securities will be given an opportunity to earn a fair return upon and be reasonably secure in his principle so long as the utility lives up to its obligations as laid down by the local community and state regulatory authorities. It eliminates the fear of abrupt termination of the right to do business with its consequent destruction of property and substitutes therefor, a condition which is economically sound and just both to the user and the public utility.

STATE REGULATION OF MUNICIPALLY OWNED OR OPERATED PUBLIC UTILITIES

Publicly owned or operated utilities should be subject to regulation by the state in like manner as are privately owned or operated utilities. The users of service in each instance are entitled to the best assurance of reasonable rates and adequate standards of service. The state by reason of the machinery set up for regulation is the best fitted to do it. It provides an administrative staff qualified by experience and training for the



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Radiant Gas Heaters

The Welsbach Company offers a complete line of Radiant Gas Heaters, from the small-room type to the large artistic fireplace models as shown in the illustration. Self-Lighting is one of NINE EXCLUSIVE FEATURES.

Write for folder, NEW LOWER PRICES and attractive discounts.

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A New Value In WATER HEATERS

A highly efficient, dependable and economical Welsbach product, the

HOTZONE

Automatic Storage Gas Water Heaters

offer remarkable value at attractive low prices. Made in 20 gal. and 30 gal. sizes.

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Stop and Prevent Corrosion and Disintegration

McEVERLAST
PROTECTIVE COATINGS

McEverlast Protective Coatings are a new type of preservative . . . . penetrating, elastic, permanent. Native "Live" Trinidad Lake Asphalt, held in suspension, and Utah Gilsonite, constitute 90% of their base, providing a protective coat that is water-proof, corrosion-proof, highly alkali and acid resistant.

They are an ideal preservative for metal, wood, concrete, stone or burned clay products. They penetrate these materials to an unusual depth, providing absolute protection from corrosive elements . . . acids, alkalies, moisture, salt air, sea life, etc.

McEverlast Protective Coatings render wood immune to the attack of termite (white ants), and protect it from dry and damp rot. Treated portions will last indefinitely when buried in the ground.

McEverlast Protective Coatings will not crack, chip or peel. Being made from "Live" Trinidad Lake Asphalt, they are elastic and are uninjured by the vibration, contraction or expansion of the surface they cover.

Applied cold by brush, dipping or spraying, just as shipped in the containers. No heating or thinning required or allowed.

Here is the ideal paint for Gas Generators

LUMINITE
The 800° Heat Paint

Luminite is a heat resisting paint that will endure heat of 800 degrees for a long period with practically no effect on the painted surface. Sudden cooling or heating will not make this paint check, crack or flake.

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task and this staff applies itself constantly to it. In this way accounting principles and practices of the most approved type can be established and maintained in the interest of uniformity and to properly allocate and account for the expenses of operation and capital expenditures, adequate standards of service fixed by regulatory authorities with the advice and counsel of those of the staff by expert analysis and investigation of the value of property for purposes of rate making and rates fixed which will be compensatory and which will be as nearly equitable as possible among all classes of users and thereby prevent discrimination. Regulation can be fair and reasonable only if it is impartially and expertly administered.

Impartial regulation is the only safeguard against political manipulation, with its possibilities of discriminatory rates and revenue inadequate to care for the expenses of operation and fixed charges. It is certain if the state is qualified to regulate private utilities it is equally as well qualified to regulate municipal utilities. The nature of ownership or operation does not justify any exception in the application of the principle and practice of state regulation. Again, impartial regulation is the only assurance of a disinterested disclosure of the facts to determine the success or failure of municipally owned or operated utilities. Such representation of the facts, together with a showing of the extent to which the elimination of taxes has been a factor in influencing the cost of service by shifting taxes previously borne by the rate payer to the taxpayer, are the only means to set forth true comparisons of the operation of such utilities with those privately owned or operated. The municipally owned or operated utility subject at least to proper accounting practices, with its property properly valued and required to report its operations in detail in like manner as privately owned or operated utilities, will not be able to make a favorable showing in defense of the personnel of the administration in power by deferring maintenance, failing to set up proper reserves for depreciation or shifting items of expense to other departments.

The user of service should pay the cost service applicable to his class of use. The freer government operation is from the influence of politics the more equitable and efficient will be its administration. Consequently, the greater will be the assurance that each user pays his just share of the cost of service and that no user is favored at the expense of another either because of lack of proper regulation or political expediency, and the better the taxpayer will be protected from making up in revenue what the ratepayer does not provide. Competent regulation is the taxpayer's only safeguard against being made the goat of incompetent management just as it is the ratepayer's only safeguard, whether it be a municipal or private utility, against unjust charges and inadequate service.

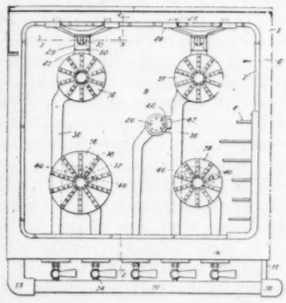
Public ownership should stand or fall upon its merits as disclosed by a true presentation of the facts. The municipality is the creature of the state and if the state's protection is good for the people of some municipalities it should be good for all of them. If the municipally owned or operated utility is efficiently and fairly managed, then the municipality has nothing to fear from such regulation and if it is not so managed then the ratepayer and taxpayer have everything to gain.

THE TAXATION OF MUNICIPALLY OWNED OR OPERATED PUBLIC UTILITIES

A state or municipality is not functioning

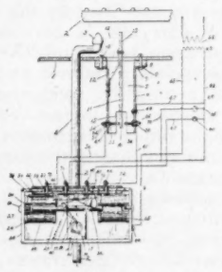
THIS MONTH'S PATENTS PERTAINING TO THE INDUSTRY

1,596,973. BURNER SUPPORT. Peter I. Hollman, Rockford, Ill., assignor to Geo. D. Roper Corporation, Rockford, Ill., a Corporation of Illinois. Filed Apr. 16, 1925. Serial No. 23,511. 5 Claims. (Cl. 126—39.)



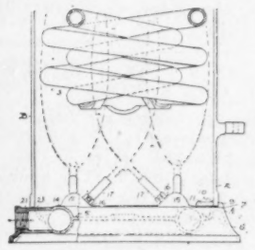
1. In a burner support the combination with an open top of a stove, a burner, means for supporting the burner at the front of the top, means for supporting the burner at the back of the top, an apertured lug projecting from the burner and another burner also supported at the front of the stove and having a depending projection entering the aperture of said lug.

1,597,403. SAFETY CONTROL FOR PILOT LIGHTS. James Crombie, Pasadena, Calif. Filed Oct. 16, 1925. Serial No. 62,900. 13 Claims. (Cl. 67—116.)



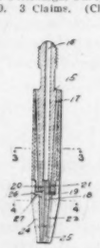
1. A safety control for pilot lights comprising in combination a main burner, a pilot light, a thermostat associated with the pilot light to be heated by such pilot light in its normal operation and substantially unlnfluenced by the main burner, a gas valve controlling the flow of gas to the pilot light, an electro-magnetic device operatively connected to said valve to open and close same, and an electric circuit through the thermostat to shut off the valve when the pilot light is extinguished

1,580,904. GAS-BURNER UNIT FOR HEATERS. Harry E. Kerr, Cleveland, Ohio, assignor to The Cleveland Gas Burner & Appliance Company, Cleveland, Ohio, a Corporation of Ohio. Filed Dec. 3, 1924. Serial No. 753,618. 13 Claims. (Cl. 126—355.)



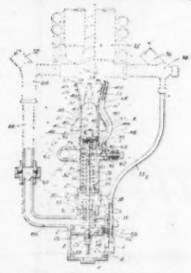
1. A cast metal base unit for a heater casing containing water circulating elements, consisting of a base member, gas burner, and drip pan formed in a single piece and having air and gas commingling tubes mounted thereon.

1,597,554. BURNER. Walter W. Thorpe and Frederick W. Hochstetter, Pittsburgh, Pa., assignors to Joseph C. Trees, Pittsburgh, Pa. Filed Apr. 1, 1925. Serial No. 19,900. 3 Claims. (Cl. 158—27.4.)



1. The combination in a torch burner having a body member provided with gas passages, of a burner body threaded into said body member and provided with a centrally disposed gas passage and a series of gas passages arranged around said gas passage, a proportioning member extending axially into said burner member and provided with a central gas passage and exterior grooves forming gas passages and a removable end cap threaded onto said burner body and provided with a conical bore co-operating with the exterior surfaces of said proportioning member

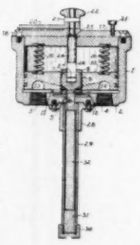
1,572,263. WATER-HEATER BURNER. Albert L. Hall, Los Angeles, Calif., assignor to Simplex Heater Company, Los Angeles, Calif. Filed July 15, 1924. Serial No. 726,183. 1 Claim. (Cl. 137—153.)



In a burner, a soft valve seating ring, a gas valve means for normally closing said valve under pressure, and a projection projecting into the opening of said ring to prevent closing of said opening by the pressure of the valve against the ring.

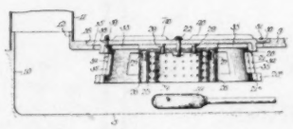
1,550,694. AUTOMATIC GAS-HEAT CONTROLLER. Lees Hall, Baltimore, Md., assignor to Alfred W. Channing, Inc., New York, N. Y., a Corporation of New York. Filed May 31, 1923. Serial No. 642,717. 2 Claims. (Cl. 236—102.)

1. An automatic gas controller comprising a hollow body portion having a counterbore, a gas inlet opening and a gas outlet opening in the bottom wall thereof, an adjustable spring pressed piston mounted within said body portion and provided with gas passages in the lower face thereof and with a centrally arranged extension surrounding said passages and adapted to seat in said counterbore when said piston is in its lowermost position whereby flow of gas through said passages is restricted or stopped, an expansible and contractible tube secured to said body portion, a non-expansible rod slidably mounted in said tube and operatively connected with



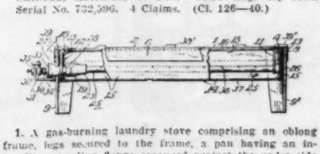
said piston, and means secured to said piston and adapted to position the same within the body portion whereby the degree of heat at which the controller is to operate is controlled.

1,577,017. GASEOUS-FUEL STOVE. Fred Grub, Chicago, Ill. Filed Sept. 15, 1924. Serial No. 737,686. 4 Claims. (Cl. 126—214.)



1. The combination with a stove having a combustion chamber provided with a top wall having an opening therein, an outlet stack for the products of combustion, and a burner for gaseous fuel disposed in said chamber and under said opening, of a cover for the opening in the top wall of the stove consisting of a substantially flat top member having an outwardly extending rim adapted to set upon the margin of the top wall adjacent the opening to support the cover, said top member being provided with openings to permit the products of combustion to pass therethrough directly to a vessel disposed over the cover, and a depending member disposed inwardly of the rim and within the combustion chamber for directing the said products of combustion to said top member, said depending member having openings therein for permitting the said products to pass under the top wall of the stove laterally to the stack, and means for conjointly closing the openings in the top member and for opening the openings in the depending member so the products will pass directly to the stack and be prevented from passing through the top member, and for opening the openings in the top member and closing the openings in the depending member so the products will pass directly through the top member of the cover to the said vessel.

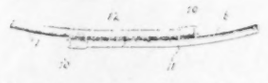
1,597,116. GAS-BURNING LAUNDRY STOVE. Burr R. Skinner, Aberdeen, S. Dak. Filed Aug. 18, 1924. Serial No. 732,396. 4 Claims. (Cl. 126—40.)



1. A gas-burning laundry stove comprising an oblong frame, legs secured to the frame, a pan having an inwardly-extending flange arranged against the under side of the frame, bolts securing said flange to the frame and being accessible inside the pan, hangers having members arranged in the pan and connected to said bolts, and burners in the pan supported by said hangers.

1,597,237. DIAPHRAGM FOR GAS METERS. Frederick McDonald, Albany, N. Y., assignor to American Meter Company, Incorporated, New York, N. Y., a Corporation of Delaware. Filed June 9, 1923. Serial No. 644,513. 1 Claim. (Cl. 73—1.)

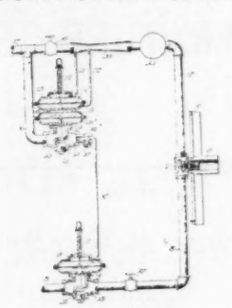
A membrane for gas meter diaphragms comprising a plurality of pieces of leather arranged with end portions of the flesh side surface of one piece overlapping and adhesively secured to end portions of the flesh side surface of the adjacent piece, each piece having a series



of felling stitches passing therethrough and engaging a contiguous portion of said adjacent piece without passing through the hair side thereof.

1,573,079. APPARATUS FOR PROPORTIONATELY MIXING AIR AND GAS. Garnet W. McKee, Rockford, Ill. Filed Apr. 16, 1924. Serial No. 707,010. 9 Claims. (Cl. 48—184.)

1. In an apparatus for proportionately mixing air and gas, an air supply line, means for producing a pressure differential in said air line, an intermediate pipe, means for varying the fluid pressure in said pipe in accordance

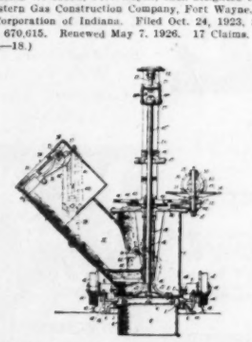


with said differential, a gas supply line, and means for varying the flow of gas in said gas supply line in accordance with the pressure in said pipe.

1,576,729. ILLUMINATING-GAS BLOWPIPE. Franz Geiss, Neukolln, near Berlin, Germany, assignor to the Firm Oeltanks Gesellschaft m. b. H., Berlin, Germany. Filed Mar. 30, 1925. Serial No. 19,431. 1 Claim. (Cl. 158—27.4.)

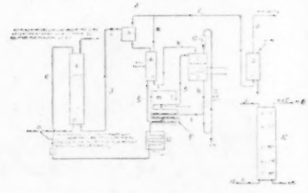
An illuminating gas welding and cutting blow-pipe comprising a handle having oxygen and illuminating gas supply pipes, a mixing tube removably seated in said handle, a sleeve at the inner end of said mixing tube forming the wall of a central illuminating gas aspirating chamber, said sleeve being spaced from the inner wall of said handle and having openings formed through its wall, a nozzle removably secured in the inner end of said sleeve and spaced from the wall thereof, forming an annular illuminating gas passage delivering into said central aspirating chamber between said nozzle and mixing tube, an oxygen supply pipe connected with said nozzle, the diameter of said annular illuminating gas passage being the quintuple of the diameter of the outlet of the said oxygen nozzle.

1,597,314. CHARGING APPARATUS FOR GAS GENERATORS. Abram C. Howard, South Orange, N. J., and Thomas W. Stone, Fort Wayne, Ind., assignors to The Western Gas Construction Company, Fort Wayne, Ind., a Corporation of Indiana. Filed Oct. 24, 1923. Serial No. 670,615. Renewed May 7, 1926. 17 Claims. (Cl. 214—18.)



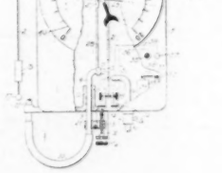
1. A charging device for gas generators comprising a hopper adapted to be positioned over the charging opening of a gas generator, and a rotatable valve element carried by said hopper for closing said charging opening.

1,597,315. PROCESS RELATING TO GAS PURIFICATION BY AMMONIACAL CUPROUS SOLUTIONS. Joseph G. Pelle, Syracuse, N. Y., assignor to Atmospheric Nitrogen Corporation, Syracuse, N. Y., a Corporation of New York. Filed Aug. 16, 1923. Serial No. 657,982. 18 Claims. (Cl. 23—7.)



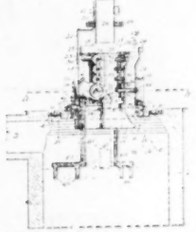
1. That improvement in the process of recovering ammonia from gas evolved in the regeneration of ammoniacal cuprous solution containing carbon monoxide which comprises treating the evolved gas with unregenerated ammoniacal cuprous solution.

1,597,221. SPECIFIC-GRAVITY METER. Fritz Frederick Uehling, Passaic, N. J. Filed July 15, 1925. Serial No. 43,710. 13 Claims. (Cl. 265—14.)



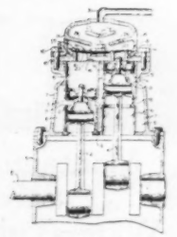
8. In a specific gravity meter, the combination with a chamber, of a fixed nozzle for admitting gas of constant gravity into the chamber, a movable nozzle for admitting into the chamber a gas of variable gravity, means for forcing the gases thru said nozzles, a counter balanced vane located between the two nozzles, a bearing on which the vane is supported, means for moving the movable nozzle toward or away from the bearing and in a plane parallel to the face of the vane, means for measuring the motion of the movable nozzle, and means for allowing the gas forced thru the nozzles to escape from the chamber.

1,550,991. GAS PRODUCER. Francis H. Treat, Est., Cleveland, Ohio, assignor to Duff Patents Company, Incorporated, Pittsburgh, Pa., a Corporation of Pennsylvania. Filed May 3, 1922. Serial No. 558,176. 35 Claims. (Cl. 214—18.)



1. In a gas producer, a plurality of fuel feed devices, a fuel support common to all of said devices, means for carrying said support by said devices, means maintaining a constant supply of fuel on said support, and separate fuel feeding means for transferring fuel from said support and delivering the same to each of said devices, substantially as described.

1,555,192. COMPRESSOR. James H. Dennedy, Detroit, Mich. Filed Dec. 10, 1921. Serial No. 521,426. 2 Claims. (Cl. 230—27.)



1. The combination in a compressor of a pair of spaced cylinders for reciprocably mounting their respective pistons, a plate constituting a common closure for the ends of said cylinders, spaced discharge apertures in said plate for the respective cylinders, an annular boss disposed in each of said apertures and detachably but non-rotatably secured to said plate, said bosses constituting discharge passages for said cylinders and having their faces ground on a common curve, a plurality of spring leaves forming a laminated valve for co-operating at their ends with said faces to close said passages, and means for clamping said leaves intermediate their ends to said plate for holding said laminated valve under tension against said faces.

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in a strictly governmental capacity when it engages in an enterprise for profit, but is functioning in a proprietory capacity in like manner as other proprietors who are privately engaged in similar enterprise. The nature of the proprietor in the conduct of any enterprise for profit should not relieve such proprietor of either the equal protection or the equal obligations of law. There should be a differentiation in the legal status of a state or municipality when it functions in its strictly governmental capacity and when it functions in a proprietory capacity in operating business for profit. The nature of profit should not alter the status in law or in equity. A state or municipality when it engages in any business which can be and is performed by private enterprise does so for profit, either in the sense of profit to the user of a service or commodity or in providing revenue in excess of the cost of such service or commodity in helping to defray the general expenses of government. In the one case the user profits and in the other the taxpayer, and it might be that both would profit.

Therefore, only property used by the state or municipality in carrying on government should be exempt from taxation. The exemption of one proprietory interest and the obligation of another in a like enterprise for profit obviously imposes an unfair burden of taxation in maintaining government and necessarily discriminates among the users of **the service or commodity.**

The need for as near an equality as possible in the burden of taxation was never more manifest than now with the vast increase in the cost of all government, the existence of a large volume of tax-exempt governmental securities and in the venture of government into business enterprise in one form or another. This need becomes even more evident where municipalities engaged in public utility service seek to supply service outside their corporate limits and thus create more tax-exempt property outside the limits of such service.

(This discussion of taxation will be concluded in the November issue of WESTERN GAS.)

SPOKANE GAS & FUEL HAS NEW COAL GAS RETORTS

Two new coal gas retorts are being constructed by the Spokane Gas & Fuel Company, replacing two old retorts. Cost of the new units is about $10,000. The Spokane plant will have 16 benches on completion of those now under construction.

ALCOHOL FROM PETROLEUM IS AN ACCOMPLISHED FACT

Production of alcohol from petroleum is an accomplished fact, according to chemists at the meeting of the Division of Petroleum Chemistry of the American Chemical Society held in Tulsa recently. Samples of the by-product were exhibited and its industrial application was discussed.

INVESTIGATION OF PEAT COMPLETED IN CANADA

For six years past a committee appointed by the Canadian government has been investigating the possibilities of using peat as a fuel. The final report just issued by the Canadian Department of Mines (Mines Branch publication No. 641) gives details of the findings of this committee; it includes remarks on the utilization of peat fuel for production of power, a description of methods used for carbonizing peat, and a bibliography.

Insulation

(Continued from Page 20)

Considering the small size of this particular home the savings in actual figures are significant and as before stated would be considerably greater in a larger or more complex home with a greater percentage of wall and ceiling area. It is interesting to note that in addition to saving the owner 78,000 cubic feet of gas, insulation enables him to use less radiation and a smaller central heating unit. The cost of insulation in this example would run between 15c to 25c a square foot or from $337.00 to $560.00 depending upon the type of material suitable. This cost is reduced by the decreased size of the heating equipment, giving a net figure that is surprisingly small.

INSULATION FOR ECONOMY

In many instances the owner of an insulated house is able to enjoy the absolute heating comfort and freedom from care accruing to him through the use of a complete gas-fired heating system for the cost of heating the same house uninsulated with other fuels.

Therefore the gas salesman who works in cooperation with insulating companies will find a greatly increased field for his commodity and a valuable contact with architects and builders.

Insulation is not only of interest to the sales department of a gas utility but also to the production, distribution, and rate departments, due to the lower maximum hourly demand for their product in an insulated gas-heated home and the dove tailing of the insulated house demand and the uninsulated house demand.

Let us assume that the preceding examples are both controlled with a thermostat and that the mean outside temperature is 40 degrees. The insulated house will call for heat every three and one-quarter hours, whereas the uninsulated house would demand heat every two and three-quarter hours. The two demands will not coincide except in extremely rare cases. This dove tailing of the insulated and uninsulated demands tends to materially smooth out the hourly and daily send out curve and the maximum hourly gas demand and season's consumption of the insulated hourse being 27 per cent lower than the uninsulated house, as in this case, enables the gas utility to serve more house-heating consumers without any additional capital outlay for distribution equipment or plant capacity.

INSULATION HOLDS HEAT

Another significant result from the use of insulation in gas-heated homes is manifested when a drop occurs in the outside temperature. The insulated home will hoid its heat from 37 per cent, as in the example shown, to 50 per cent longer than the uninsulated home and probably would not make its demand on the system until the uninsulated home was practically up to temperature.

Curves and statistics on insulated and uninsulated houses are contained in articles that have appeared from time to time in the gas and building publications and additional charts may be obtained from the insulating companies' files.

Actual results confirm the theoretical figures and conclusively show that insulation offers us a means of increasing the house-heating business and at the same time makes this business more desirable to the gas utility. It is decidedly to our advantage to work closely with the insulating companies with the common purpose of better service to the public.

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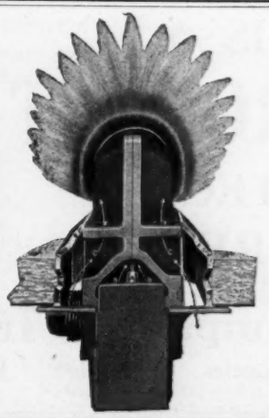

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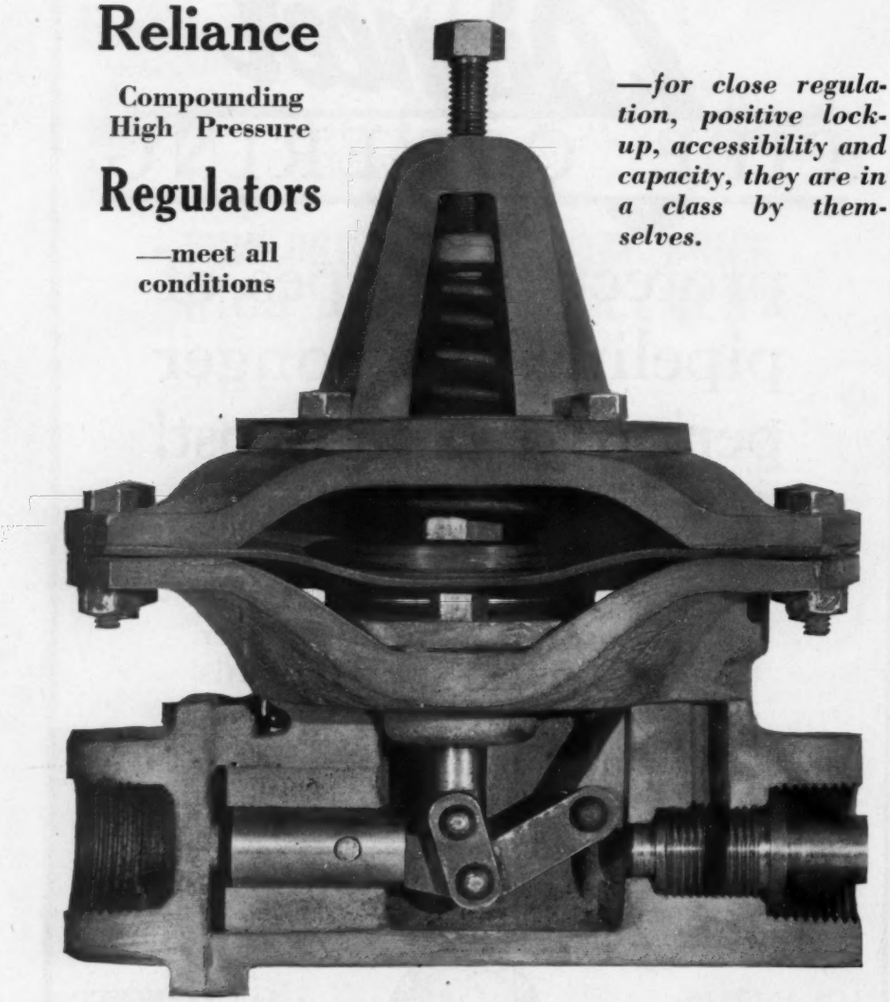

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Pasadena, California

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San Francisco Oakland Los Angeles Seattle Portland

Health Hazards

(Continued from Page 19)

is reduced just as soon as the kettles have reached the proper temperature. In a solid-top range the adjustment of the flame is likely to be neglected more than in the grid-top, and instead of cutting down on the gas the kettles may be merely shifted to a cooler place on the top of the range. Greater safety of operation would therefore be expected to result; not necessarily in every installation, but in general, if solid-top ranges were installed with vents connected to flues or chimneys.

CONVERTED GRID TOPS A MENACE

Our greatest concern, however, is with the ranges that have been converted from the grid-top to solid tops in which no special provision has been made to carry away the products from beneath the top. Many cases where such appliances have produced dangerous conditions have been discovered in the comparatively small number of cases where the installations have come under the observation of careful investigators.

The extent of the effect of chronic carbon monoxide poisoning depends largely on individual resistance. Some persons, usually those with strong constitutions, apparently are immune to small percentages of carbon monoxide. Others with less resistance may suffer from time to time with various ailments.

Watkins* states that symptoms of chronic carbon monoxide poisoning are persistent and distressing headache, nausea and vomiting, attacks of giddiness, muscular weakness, lack of coordination, rapid fatigue, heart trouble, anemia, nervous disorders, neuritis with ensuing paralysis, melancholia or hallucinations, impaired mental alertness, etc. It is apparent that a person's health may be greatly impaired from continuous or frequent exposure to toxic quantities of carbon monoxide.

The following letter was received from a person who was poisoned from using a portable solid top on a range designed for a grate top. The top as designed prohibited the proper flow of air to the region of the flame.

ANOTHER TESTIMONIAL

"In reply to your favor of February 13, 1924 asking me if I believed the removal on July 8, 1922, of my portable solid top on my gas range had improved or changed the condition of my health, I must truthfully and honestly answer 'Yes.' Two members of your staff, after making tests on my gas range with the top in use, advised me to stop using the portable solid top. After sufficient time had elapsed for the poison in my system to wear off, I found I was no longer worried with pain in my hands, and gradually the swelling in them disappeared; and as I have not used the solid top on my gas range since July 8, 1922, I have been perfectly free from the 'rheumatism' that previously affected me. I have told you truthfully my experience with the tolid top in order to save other women what I have suffered and have no desire to injure the company, for I am sure they had no idea that their stove top prohibited the proper combustion of the gas. If you desire my solid top to make more extensive tests I will be only too glad to give it to you for such purposes, as I will never use it again."

A careful laboratory investigation of another installation where the grid top had

*J. A. Watkins. Carbon Monoxide Poisoning in the Steel Industry. Bureau of Mines Technical Paper 156.

been replaced by a solid top showed that the solid top produced about 5.6 cubic feet of carbon monoxide per hour when the four burners under the cooking top were operated. It was fortunate that this stove was installed in a large kitchen 12 ft. 6 in. by 11 ft. 6 in. by 9 ft. 10 in. (volume=1400 cu. ft.) The kitchen had three doors and one window. The door which opened to the dining room was always open, which greatly aided in ventilating the kitchen. The following memorandum, which was received from the head of the household, gives some idea of how the people who worked in the kitchen had suffered:

"Mrs. M. purchased a top plate for her gas range over a year ago. The purpose was to keep soup, etc., from spilling over the burners and to economize on gas. For the past year Mrs. M. has often been feeling sick, especially after being in the kitchen for any length of time, as she attends to the cooking for the most part herself. She began to have frequent headaches. She also complained of her eyes aching and vision being impaired on some days. Examination of the eyes by an opthalmologist revealed no organic trouble or any refractory defect. I could not determine exactly the cause of the headaches until recently. On several occasions after being in the kitchen, Mrs. M. was taken with weak spells and had to go into another room to lie down, half fainting. The house maid who helps with the kitchen was also suffering from headaches and sick stomach. Since an investigation of the gas range, I am convinced that all of the above symptoms were caused by noxious or poisonous gases generated by the defective gas range and especially thru incomplete combustion on account of the top plate."

MODIFIED BURNERS NECESSARY

The various manufacturers of solid-top ranges have all discovered that it is extremely difficult to get sufficient ventilation under the cooking top without some modification in burner design, change in location of burners, and special provision for carrying away the products through the oven or through the back of the oven. The replacement of a grid with a solid top is therefore likely to be unsatisfactory and unsafe unless the change is made by experienced workmen who are thoroughly familiar with the precautions that are necessary and are in position to make the required changes in construction.

CITY GAS FREES USER FROM HIGH COAL COSTS

Inroads being made by smokeless fuels, particularly gas and coke, on the domestic heating business are creating a serious problem for the anthracite coal industry, according to Samuel D. Warriner, spokesman for the mine operators, during a recent conference in Atlantic City.

"As we all know," Mr. Warriner said, "there is a limit to the price that the consumer will pay. When that time is reached, he searches for substitutes, and industry and invention provide them. That is what is happening to the anthracite industry. With the rapidly increasing cost of anthracite in comparison with other fuels, its consumption per capita has steadily shrunk.

"One of the largest gas companies in the country has just announced that it has perfected still more economic apparatus for heating. The result of this is that the use of anthracite as a summer fuel has practically ceased."

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It can be applied without heating and by inexperienced labor. Only one application necessary.

Let us know your requirements. We will be glad to send you sample and quote you prices. If you have any particular difficulties peculiar to your soil or climate, our Service Department is at your disposal.

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are carried in stock for quick shipment. If special or hand-made shapes are required, our plant is especially well equipped to make them.

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Due to its scientific preparation and graphite base, this paste is **oil, acid and gasoline proof.** It is soluble only in water. Of paste-like consistency, it is **easily spread** on pipe joints, fittings, flanges, flange unions, and every place where a leakproof joint is desired. **It expands under heat, filling every crack and crevice—then carbonizes.**

It renders joints not only leakproof, but easy to take apart if desired.

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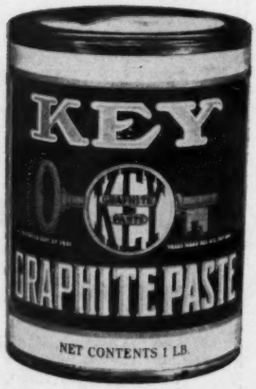
Put up in any size container, from a one-pound can to a five hundred pound drum.



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KEY Graphite Paste

A.G.A. Meet Close *at* Hand

(Continued from Page 17)

Company; and, "Description of Installation of Continuous Heat Treatment Furnaces—Studebaker Plant," by Carl Lekberg, Northern Indiana Gas and Electric Company, South Bend, Ind.

Three sessions of the Technical Section will also be held, one of the outstanding papers being "Dehydration of Manufactured Gas," by F. W. Sperr, Jr., of the Koppers Company.

The Publicity and Advertising Section will hold a one-day meeting, the subject of which will be "Advertising." This will be in the nature of an open forum on one of the most pressing problems that faces the industry at the present time. Joe Carmichael, director, Iowa Committee of Public Utility Information, will present the state directors' side of the question in his talk, "Who Knows About Gas and Why Not?"

A man of national prominence in the advertising world will talk on the problems and benefits of advertising. This will be followed by a symposium in which more than 100 different people have already asked to be allowed to participate. C. E. Paige, Brooklyn Union Gas Company, will preside at the symposium.

ALEXANDER B. MACBETH

To Western gas men who journey to Atlantic City for this eighth annual national forum of the industry, there is particular significance in the nomination of Alexander B. Macbeth as president of the American Gas Association for 1927. Mr. Macbeth, executive vice-president of the Southern California Gas Company and the Midway Gas Company, has behind him a background of experience which makes him a logical candidate for this high post. In shouldering the responsibilities which go with the office Mr. Macbeth will bring to himself and to the West from which he comes a high measure of honor. *Western Gas* takes this opportunity to point to a few of the milestones which have been passed in the progressive career of this Western leader.

Alexander B. Macbeth was born at Greenville, South Carolina, on September 5, 1873, the son of Alexander Macbeth and Eliza Trenholm Macbeth. He has the distinction of being the grandson of George A. Trenholm, Secretary of the Treasury of the Confederate States of America. In 1914 he was married to Miss Rosemarie Newcomb.

He was educated at the Portland Military Academy, Charleston, South Carolina; Stevens Preparatory School; and Stevens Institute of Technology, Hoboken, New Jersey, from which he was graduated in 1897 with the degree of Mechanical Engineer.

In the same year he entered the New York office of the B. F. Sturtevant Company of Boston, manufacturers and engineers. In 1898 he became cadet engineer in the Gas Improvement Company's Philadelphia gas works; in 1899, cadet engineer with the Atlanta Gas Company.

Mr. Macbeth was made assistant superintendent of the Kansas City, Missouri, Gas Company in 1900. As engineer for this company he in 1906 installed a natural gas distribution system. In 1910 he built large additions to the Kansas Natural Gas Transportation System, and became general manager of that company.

MOVES TO PACIFIC COAST

The year 1914 saw Mr. Macbeth's move to the Pacific Coast, when he took the vice-presidency and general managership of the

Southern California and Midway Gas Companies of Los Angeles, California. In 1925 he became executive vice-president of these utilities.

This brief summary covers the highlights of Mr. Macbeth's service in the gas industry proper. His executive experience, needless to say, is even wider. He is a past director of the American Gas Association, and at present writing is a vice-president of that Association; in 1911 he held the presidency of the Natural Gas Association of America. During the World War he served on a citizen's committee of 20 members, who examined camps and reported to the Assistant Secretary of War.

He headed the Chamber of Mines and Oil, Los Angeles, which organization coordinates all of the oil and mining interests of the Pacific Coast, in 1925. He is a director of the Union Bank and Trust Company of Los Angeles, and a director and member of the executive committee of the Union Oil Company of California.

GAS FOR MOTOR TESTING GAINS IN FAVOR

The same gas that burns in the kitchen stove and in the water-heater is now being used by an increasing number of manufacturers instead of gasoline to test and wear in automobile motors. Block testing and wearing in are essential to the operation of the finished car, and it is found that for this purpose gas has numerous advantages. Where gasoline is used in testing rooms, the atmosphere becomes highly charged with carbon monoxide. By the use of gas this danger is avoided. The use of gas also insures perfect combustion, with no deposits of any kind in the motor cylinders, leaving the motor clean and ready for service at the end of the test run.

UNITED STATES LEADS IN WORLD PRODUCTION OF OIL

Leading the world and surpassing its own previous records with total production of 758,000,000 barrels of oil in 1925, the United States also showed the largest gain, more than 44,000,000 barrels over the preceding year. Mexico, with a total of approximately 115,547,000 barrels declined about 25,174,000 from its 1924 output of 140,721,000 barrels. Russia maintained its position as third largest producer, with an output of about 45,312,000 in 1924. Persia continued in fourth place with a production of about 35,000,000 barrels against 32,373,000 in 1924.

GASCO FURNACES PROVE GOOD SELLERS IN PORTLAND

A compact battery of Gasco furnaces is being installed in the old Grace Memorial Church in Portland, Ore., for heating the new church which is nearing completion 50 feet away from the old one. The warm air and return are conveyed between the two buildings through concrete underground ducts.

The new Portland Danish Temple is also ready for the furnace, which is to be a battery of five Gasco units.

GAS AND OIL POSSIBILITIES OF IDAHO DESCRIBED

Recent investigations to determine the oil and gas possibilities of Idaho are described in the annual report of Stewart Campbell, state inspector of mines. Mr. Campbell states that structures favorable to the accumulation of oil and gas in commercial quantities are found in Caribou, Bonneville, Teton, Power, Oneida, and Bear Lake counties.

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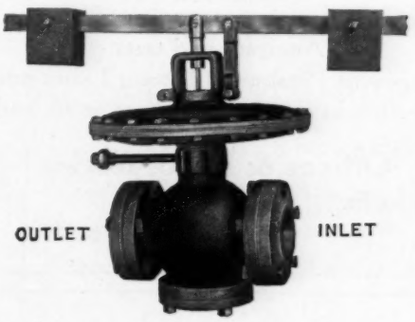

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For All High Temperature Uses

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Analyses and tests.
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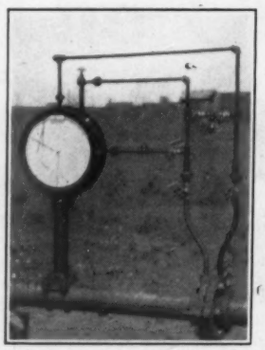

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FOXBORO METERS AND JENSEN ENGINEERING SERVICE

We are successfully applying this superior meter to Gas, Air, Steam, Oil and Water Flow.

There are folks who will tell you of many difficult problems we have solved; and about our splendid sales service.

WE SELL RESULTS

Whether it be meters or any other part of our "complete line of dependable industrial instruments and steam specialties."

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Classified advertising five cents per word; minimum $2.00 per insertion. Situation Wanted advertisements up to 50 words will be published three consecutive issues without charge.

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Note: Western Gas will publish free of charge, under this heading, advertisements of situations wanted. Maximum length, 50 words; additional space at classified rates five cents per word per insertion. Copy should be neatly typewritten on one side of paper only, and should be mailed to reach *Western Gas* not later than the 20th day of the month prior to publication date.

Wanted—Employment on the Pacific Coast by man from Mid-Continent Field. Experience installing and managing city distribution plants, and general line work. Last position paid $200.00 and expenses which I resigned due to family sickness. Box A-2 *Western Gas.*

Heating Engineer—39 with 25 years experience in warm air heating in all its branches, mfg. heaters, lay out work, figure jobs, handle men and shop, install work and sell to the public. At present employed but want better and permanent opening with chances for advancement. Will start at $250.00. Have several good gas heater patents. Box A-1 *Western Gas.*.

Sell your second hand machinery and equipment through a small classified advertisement in *Western Gas.* It costs but five cents per word or $2.00 per issue.

BRITISH AUTHORITY QUOTED ON WORLD OIL SUPPLY

The oil supply of the United States will be exhausted in twenty-five years and the entire world's oil supply in from 80 to 100 years, according to Sir Richard Redmayne, formerly chief inspector of British mines. He made this statement while giving evidence before the Royal Commission of the Coal industry at London. Sir Richard remarked incidentally, that one authority declared the American supply of oil would be exhausted in 12 years.

SURVEY MADE OF BIG HORN BASIN, WYOMING

The Department of the Interior in announcing the publication of Geological Survey Professional Paper 145, calls general attention to the issuance of a report by D. F. Hewett, describing the oil, gas and coal resources of an area of about 600 square miles in the western and southwestern parts of the Big Horn Basin, Wyoming.

BUREAU OF STANDARDS TO HAVE LIST OF LABORATORIES

The Bureau of Standards is making as nearly complete and accurate as possible its list of laboratories throughout the country that are prepared to test various kinds of commodities to determine whether or not they comply with purchase specifications.

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Represent
Twenty-five Years of
Progress

We Are Proud of
Our Service to
the West

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Sell
HEATERS AND GAS

Hot water heaters equipped with vital parts of Copper and Brass are known as superior installation. *That Helps to Sell Them!*

Being rust-proof they give a maximum of service. *That promotes sales of gas!*

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RESEARCH ASSOCIATION
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Completed on Schedule

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Warehouses in All Important Centers

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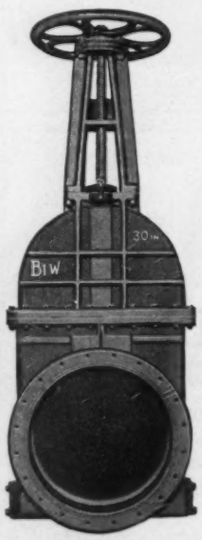

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Low Pressure Valves

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Mettler Entrained Combustion Gas Burners
FOR ALL Purposes
Kinds of gas
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Westinghouse Positive Fluid Gas Meter. An all-metal meter for either HIGH or LOW Pressure, Manufactured or Natural Gas.

Specially adapted to Commercial or Industrial Services.

Ironclad Cast Iron Dry Gas Metre—for Domestic and small Industrial or Commercial Services, either Natural or Manufactured Gas.

Prices and Complete Information gladly furnished on request to office nearest you.

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J. H. HILL, Representative

Union Bank Bldg. Telephone VAndike 7114
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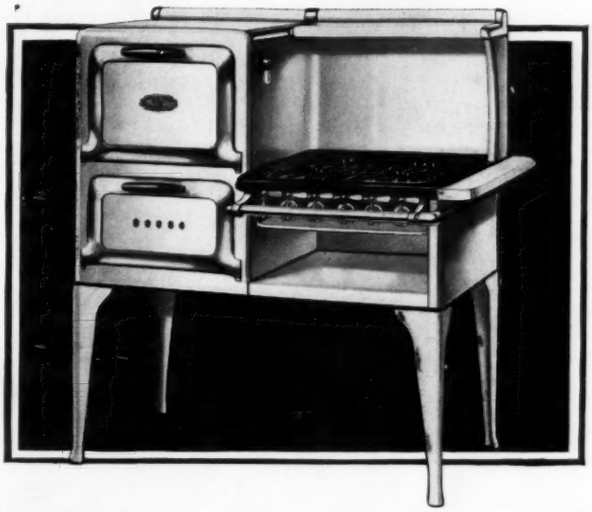

Model 1016 with oven Heet-Master

Approved by American Gas Association 1926

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THE WORLD'S FINEST GAS RANGE

14 Patented Features

No bolts or screws in sight

All corners rounded; no square edges

Concealed hinges, door lock and flue

Not a place for dirt to hide

Practical features that sell ranges

WHITE STAR
"WORLD'S CLEANEST GAS RANGE"
FIRST PRIZE
FIRST ANNUAL CALIFORNIA MAID EXPOSITION
LOS ANGELES CALIFORNIA
April 19-24 1926
Awarded
Detroit Vapor Stove Co.

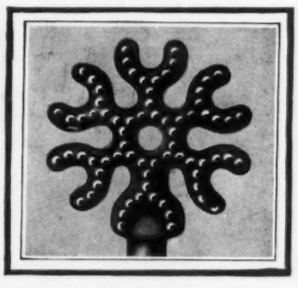
Pressed steel and cast iron construction

Three coats white glistening porcelain

Wilder or Porcelain oven linings

Utensil drawer extra if desired

Dependable, automatic HEET MASTER oven control

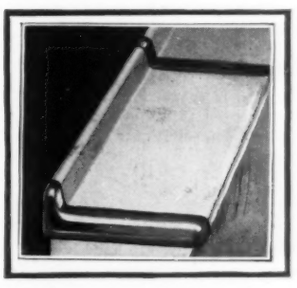


Even-Heet Burner— Patented—embossed ports

White Star
GAS RANGES

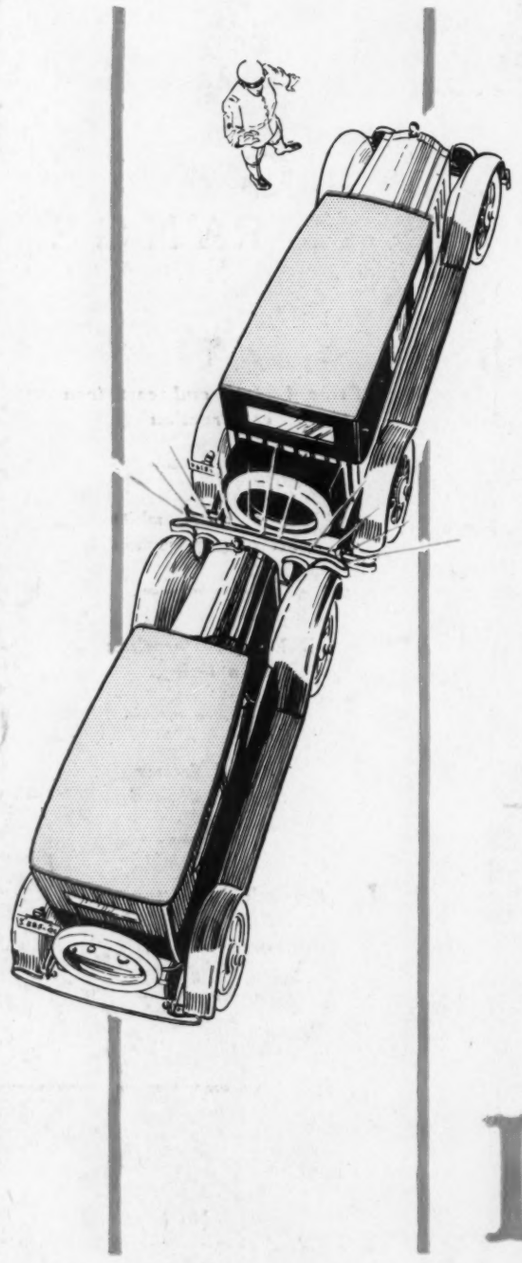
THE DETROIT VAPOR STOVE COMPANY
Detroit, Michigan

635



One-piece roll-top shelf all rounded—no crack

Meter Connections are to Meters What Bumpers are to Automobiles



YOU know from ample experience how the cost of bumpers on an automobile is soon absorbed by the money they save in preventing small damages.

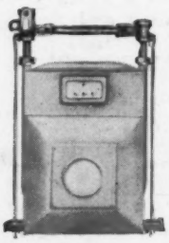
Lattimer-Stevens Meter Connections furnish the same protection to meter equipment as bumpers do to an automobile, a protection that more than pays for itself. The cost of a single meter repair, made unnecessary by their use, might represent many times the cost of the connection.

Lattimer-Stevens Connections are furnished with or without built-in stop cocks and with or without meter shelves. Write for samples and catalog.

THE LATTIMER-STEVENS CO.

72 Yale Ave., Columbus, Ohio

No. 2 overlapping bar type Lattimer-Stevens meter connection with meter shelf.



No. 45-A. Tie in bar type meter connection with meter shelf.

Lattimer Stevens

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STOP COCKS AND SEALS

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